Bound by
Walker & Son
Plymouth.

Smithsonian
Institution
Libraries

Purchased from the

CULLMAN ENDOWMENT

PENZANCE
LIBRARY

QE
801
S69
1812
v.7
SCNHRS

ALPHABETICAL INDEX.

	Vol.	Tab.	Fig.	Page.
ACTEON acutus	5	455	2	78
crenatus	5	460	1	87
cuspidatus	5	455	1	77
elongatus	5	460	3	88
Noæ	4	374		101
simulatus	2	163	5–8	144
striatus	5	460	2	87
Ammonites acutus	1	17	1	51
angulatus	2	107	1	9
annulatus	3	222		41
armatus	1	95		215
auritus	2	134		75
Bakeriæ	6	570	1, 2	134
Banksii	2	200		299
Bechei	3	280		143
Benettiæ	6	539		77
binus	1	92	3	208
biplex	3	293	1, 2	168
Birchii	3	267		121
Blagdeni	2	201	1, u.	231
	5	500		
Braikenridgii	2	184		187
brevispina	6	556	2	106
Brodiœi	4	351		71
Brocchii	2	202		233
	5	500	2	
Brongniarti	2	A	2	190
Brookii	2	190		203
Brownii	3	263	4, 5	114
Bucklandi	2	130		69
calloviensis	2	104		3
Catena	5	420		21
Catillus	6	564	2	123
cinctus	6	564	1	122
communis	2	107	2, 3	10
complanatus	6	569	1	133
concavus	1	94		214
constrictus (Scaphites)	2	A	1	189
contractus (Brocchii)	5	500	2	162
Conybeari	2	131		70
cordatus	1	17	2, 4	51
corrugatus	5	451	3	74
cristatus	5	421	3	24
curvatus	6	579	2	154
Davœi	4	350		71
decipiens	3	294		169
denarius	6	540	1	78
dentatus	4	308		3
Discus	1	12		37
Duncani	2	157		129
elegans	1	94		213
ellipticus	1	92	4	209
excavatus	2	105		5
falcatus	6	579	1	153
falcifer	3	254	2	99
fibulatus	4	407	2	147
fimbriatus	2	164		145
funatus	1	32		81
Gervillii	2	A	3	189

	Vol.	Tab.	Fig.	Page.
Ammonites giganteus	2	126		55
Goodhalli	3	255		100
Gowerianus	6	549	2	94
Greenoughii	2	132		71
Gulielmii	4	311		5
Henleyi	2	172		161
Henslowi (Goniatites?)	3	262		111
Herveyi	2	195		215
heterophyllus	3	266		119
Hippocastanum	6	514	2	24
Humphriesianus	5	500	1 m.	161
inflatus	2	178		170
Jamesoni	6	555	1	105
Johnstoni	5	449	1	70
jugosus	1	92	1	207
Kœnigi	3	263	1–3	113
lævigatus	6	570	3	135
lævigatus (Selliguinus)	6	549	1	93
læviusculus	5	451	1, 2	73
Lamberti	3	242	1–3	73
laticostatus	6	556	1	106
lautus	4	309		3
Leachii	3	242	4	73
lewesiensis	4	358		80
Listeri (Goniatites)	5	501	1	163
Longispina	5	501	2	164
Loscombii	2	183		185
Mantelli	1	55		119
minutus (Nautilus?)	1	53	3	116
Monile	2	117		35
multicostatus	5	454		76
Murchisonæ	6	550		95
mutabilis	4	405		145
navicularis	6	555	2	105
nodosus	1	92	5	210
nutfieldiensis	2	108		11
obtusus	2	167		151
omphaloides	3	242	5	74
Parkinsoni	4	307		1
parvus	5	449	2	70
peramplus	4	357		79
perarmatus	4	352		72
planicostatus	1	73		167
	4	406	5–7	148
Planorbis	5	448		69
planulatus	6	570	5	136
plicatilis	2	166		149
plicomphalus	4	359		82
	4	404		145
proboscideus	4	310	4, 5	4
quadratus	1	17	3	52
rhotomagensis	6	515		25
rostratus	2	173		163
rotiformis	5	453		76
Rotula	6	570	4	136
rotundus (rotundatus.)	3	293	3	169
rotundatus	3	293	3	169
rusticus	2	177		171
Selliguinus	6	549	1	93

	Vol.	Tab.	Fig.	Page.
Ammonites serratus	1	24		65
Smithii	4	406		148
Sowerbyi	3	213		23
sphæricus (Goniatites...)	1	53	2	116
spinosus	6	540	2	78
splendens	2	103		1
stellaris	1	93		211
Stokesi	2	191		205
Strangewaysii	3	254	1, 2	99
striatulus	5	421	1	23
striatus (Goniatites...)	1	53	1	115
subarmatus	4	407	1	146
sublævis	1	54		117
subradiatus	5	421	2	23
Sutherlandiæ	6	563		121
Taylori	6	514	1	23
tetrammatus	6	587	2	166
triplex	3	292, 294 / 293	4	167
triplicatus	1	92	2	208
triplicatus (triplex)	3	292, 294 / 293	4	167
tuberculatus	4	310	1–3	4
Turneri	5	452		75
varians	2	176		169
varicosus	5	451	4, 5	74
vertebralis	2	165		147
undatus	6	569	2	134
Walcottii	2	106		7
Woollgari	6	587	1	165
Amplexus coralloides	1	72		165
Ampullaria acuta (Globulus....)	3	284		151
Ambulacrum (Globulus....)	4	372		97
helicoides (Globulus...)	6	522	2	40
nobilis (Globulus...)	6	522	1	39
patula (Globulus...)	3	284		152
sigaretina (Globulus...)	3	284		152
Ancilla aveniformis (Oliva...)	1	99		225
subulata (Ancillaria...)	4	333		37
turritella (Oliva.....)	1	99		226
Ancillaria subulata	4	333		37
Ancillus elegans	6	533		64
Anomia lineata	5	425		32
striata (lineata)	5	425		32
Arca appendiculata	3	276	3	135
Branderi	3	276	1, 2	135
cancellata	5	473	2	115
carinata	1	44		99
depressa	5	474	2	116
duplicata	5	474	1	116
pulchra	5	473	3	115
quadrisulcata	5	473	1	115
subacuta	1	44		95
tumida	5	474	3	116
Astarte bipartita	6	521	3	38
cuneata	2	137	2	82
elegans	2	137	3	82
excavata	3	233		57
imbricata	6	521	1	37
lineata	2	179	1	174
lurida	2	137	1	81
nitida	6	521	2	37
obliquata	2	179	3	173
oblonga	6	521	4	38
obovata	4	353		73
orbicularis	5	444	4–6	64*
orbicularis (rotunda)	6	520	2	35
plana	2	179	2	173

	Vol.	Tab.	Fig.	Page.
Astarte planata	3	257		103
pumila	5	444	2, 3	64*
rotunda	6	520	2	35
rugata	4	316		13
striata	6	520	1	35
trigonalis	5	444	1	63*
Atrypa acuminata	4	324	1	23
	5	495	1, 3	153
affinis	4	324	2	24
ambigua	4	376		105
cordiformis	5	495	2, 4	154
glabra	3	269	1	123
oblata	3	268		123
obtusa	3	269	2	124
platyloba	5	496	5, 6	155
Pugnus	5	497		155
reniformis	5	496	1–4	154
Auricula buccinea	5	465	2	100
incrassata	2	163	1–3	143
pyramidalis	4	379		109
simulata (Acteon .....)	2	163	5–8	144
turgida	2	163	4	143
ventricosa	5	465	1	99
Avicula costata	3	244	1	77
echinata	3	243		75
inæquivalvis	3	244	2, 3	78
lanceolata	6	512	1	17
media	1	2		13
ovata	6	512	2	18
Axinus angulatus	4	315		11
obscurus	4	314		12
Baculites Faujasii	6	592	1	186
obliquatus	6	592	2, 3	186
Balanus crassus	1	84	2–4	194
tessellatus	1	84	1	193
Belemnites abbreviatus	6	590	2,3,9	179
acutus	6	590	7,8,10	180
attenuatus	6	589	2	176
compressus	6	590	4	182
elongatus	6	590	1	178
	1	160	1–3	131
granulatus	6	600	3, 5	207
lanceolatus	6	600	8, 9	208
minimus	6	589	1	175
mucronatus	6	600	1, 2 / 4,6,7	205
penicillatus	6	590	5, 6	181
pistilliformis	6	589	3	177
Bellerophon apertus	5	462	1	108
Cornu-Arietis	5	469	2	108
costatus	5	470	4	110
hiulcus	5	470	1	109
tenuifascia	5	470	2	109
Woodwardii	6	571	3	138
Beloptera anomala	6	591	2	184
belemnitoïdea	6	591	3	183
sepioïdea	6	591	1	183
Buccinum acutum	6	566	1	127
breve	6	566	3	128
canaliculatum (Fusus...)	5	415	2	14
crispatum (Purpura.....)	5	413		12
Dalei	5	486	1, 2	139
desertum (Fusus....)	5	415	1	14
elegans	5	477	1	121
elongatum (Nassa ....)	2	110	1	15
granulatum (Nassa....)	2	110	4	18
imbricatum	6	566	2	127
incrassatum (Purpura....)	5	414	2	13
junceum	4	375	1	103
labiatum (Fusus....)	5	412	1, 2	11

BSI

	Vol.	Tab.	Fig.	Page.
Buccinum labiosum	5	477	3	122
lavatum (Fusus.....)	5	412	3, 4	11
Mitrula (Pleurotoma....)	4	375	3	103
propinquum (Nassa....)	5	477	2	121
reticosum (Nassa.....)	2	110	2	17
rugosum (Nassa....)	2	110	3	17
spinosum	6	566	4	128
sulcatum	4	375	2	103
——— var.	5	477	4	122
tenerum	5	486	3, 4	140
tetragonum (Purpura....)	5	414	1	13
unilineatum	5	486	5, 6	140
Bulinus costellatus	4	366		89
ellipticus	4	337		46
Bulla acuminata	5	464	5	98
attenuata	5	464	3	97
constricta	5	464	2	96
convoluta	5	464	1	95
elliptica	5	464	6	96
filosa...	5	464	4	97
Cancellaria evulsa	4	361	2–4	84
lævіuscula	4	361	1	84
quadrata	4	360		83
Cardita *abrupta* (Isocardia....)	1	89	2	200
deltoidea (Pholadomya.....)	2	197	4	220
lunulata	3	232	1, 2	55
lyrata (Pholadomya....)	2	197	3	220
margaritacea (Pholadomya...)	3	297		175
obtusa (Pholadomya ....)	2	199	2	219
producta (Pholadomya....)	2	197	1	219
similis	3	232	3	56
striata (Isocardia.....)	1	89	1	199
tubercculata (Cardium Gentianum)	2	143		97
Cardium aliforme	6	552	2	100,132
angustatum	3	283	2	149
decussatum	6	552	1	99
dissimile	6	553	2	101
edule	3	283	1	150
edulinum	3	283	3	149
elongatum	1	82	3	188
Gentianum	2	143		97
hibernicum	1	82	1, 2	187
	6	552	3	100
Hillanum	1	14		41
nitens	1	14		43
Parkinsoni	1	49		105
plumsteadiense	1	14		42
porulosum	4	346	2	64
proboscideum	2	156	1	127
semigranulatum	2	144		99
striatulum	6	553	1	101
truncatum	6	553	3	102
turgidum	4	346	1	63
umbonatum (Pectunculus .....)	2	156	2–4	128
Cassidaria carinata	1	6		23
striata	1	6		24
Cassis bicatenata	2	151		117
carinata (Cassidaria...)	1	6		23
striata (Cassidaria...)	1	6		24
Cerithium Cornu-copiæ	2	188	1,3,4	197
dubium (Potamides .....)	2	147	5	108
funatum (Potamides ....)	2	128		64
funiculatum (Potamides .....)	2	147	1, 2	107
geminatum	2	127	2	63
giganteum	2	188	2	199
Cerithium *intermedium* (Potamides ....)	2	147	3, 4	107
melanioides (Potamides politus)	2	147	6, 7	109
pyramidale	2	127	1	61
Chama *canaliculata* (Gryphæa ....)	1	26	1	68
conica (Exogyra.....)	1	26	3	69
digitata (Exogyra ....)	2	174		165
haliotoidea (Exogyra....)	1	25		67
plicata (Exogyra conica)	1	26	4	70
recurvata (Exogyra conica)	1	26	2	69
squamosa	4	348		67
Cirrus acutus	2	141	1	93
carinatus (Euomphalus...)	5	429	3	36
depressus	5	428	3	35
Leachii	3	219	3	36
nodosus	2	141	2	94
	3	219	1,2,4	135
perspectivus	5	428	1, 2	35
plicatus	2	141	3	94
rotundatus	5	429	1, 2	36
Clavagella coronata	5	480		128
Conularia quadrisulcata	3	260	3–6	107
? teres	3	260	1, 2	108
Conus concinnus	3	302	2	180
Dormitor	3	301		179
scabriculus	3	303		180
Corbis lævis	6	580		156
Corbula complanata	4	362	7, 8	86
cuspidata	4	362	4–6	85
elegans	6	572	1	139
gigantea	3	209	5–7	13
globosa	3	209	3	14
lævigata (Thetis minor)	3	209	1, 2	14
nitida	4	362	1–3	85
obscura	6	572	5	140
Pisum	3	209	4	15
revoluta	3	209	8–13	16
rotundata	6	572	4	140
striatula	6	572	2, 3	139
Crania parisiensis	5	408		3
Crassatella plicata	4	345	2	62
sulcata	4	345	1	62
Crenatula ventricosa	5	443		64
Cucullæa carinata	3	207	1	9
costellata	5	447	2	67
decussata	3	206	3, 4	8
elongata	5	447	1	67
fibrosa	3	207	2	9
glabra	1	67		151
minuta	5	447	3	68
oblonga	3	206	1, 2	7
rudis	5	447	4	68
Cyclas cuneiformis	2	162	2, 3	140
deperdita	2	162	1	139
media	6	527	2	51
membranacea	6	527	3	52
obovata	2	162	4–6	140
pulchra	6	527	1 51	202
Cypræa Avellana	4	378	3	107
coccinelloides	4	378	1	107
oviformis	1	4		17
retusa	4	378	2	107
Cyprina æqualis	1	21		59
angulata	1	65		145
Cypris Faba	5	485		136
Dentalium acuminatum	1	70	3	159
costatum	1	70	8	162

	Vol.	Tab.	Fig.	Page.
Dentalium cylindricum ...	1	79	2	178
decussatum ...	1	70	5	161
ellipticum ...	1	70	6, 7	161
entalis? (acuminatum) ...	1	70	3	159
incrassatum ...	1	79	3, 4	180
medium ...	1	79	5	181
nitens ...	1	70	1, 2	159
planum ...	1	79	1	179
striatum ...	1	70	4	160
Dianchora lata ...	1	80	2	184
striata ...	1	80	1	183
Dolium nodosum ...	5	426		
		427		34
Ellipsolites compressus (Nautilus ...) ...	1	38		84
funatus (Ammonites ...)	1	32		81
ovatus (Nautilus globatus)	1	37		83
Emarginula clathrata ...	6	519	1	33
crassa ...	1	33 bis		74
reticulata ...	1	33 bis		73
scalaris ...	6	519	3, 4	34
tricarinata ...	6	519	2	34
Euomphalus æqualis ...	2	140	1	89
angulatus (angulosus) ...	1	52	3	114
angulosus ...	1	52	3	114
Catillus ...	1	45	3, 4	98
carinatus ...	5	429	3	36
coronatus ...	5	450	3	71
discors ...	1	52	1	113
funatus ...	5	450	1, 2	71
nodosus ...	1	46		99
pentangulatus ...	1	45	1, 2	97
rugosus ...	1	52	2	113
Exogyra conica ...	1	26	2,3,4	69
	6	605	1–3	219
digitata ...	2	174		165
	6			218
haliotoidea ...	1	25		67
	6			218
lævigata ...	6	605	4	220
nana ...	4	383	3	114
plicata (conica) ...	6			218
recurvata (conica) ...	6			218
undata ...	6	605	5	220
Fissurella græca ...	5	483		132
Fusus aciculatus ...	3	274	1–3	131
acuminatus (aciculatus *Lam.*) ...	3	274	1–3	131
alveolatus ...	6	525	1	45
asper ...	3	274	4–7	131
bifaciatus ...	3	228		49
bulbiformis ...	3	291	1–6	165
canaliculatus ...	5	415	2	14
cancellatus ...	6	525	2	45
Carinella ...	2	187	3, 4	196
complanatus ...	5	423	2, 3	27
coniferus ...	2	187	1	195
contrarius ...	1	23		63
corneus ...	1	35		79
costatus ...	1	34		75
	2	199	1, 2	225
costellifer ...	2	199	3	225
curtus ...	2	199	5	227
desertus ...	5	415	1	14
echinatus ...	2	199	4	226
errans ...	4	400		139
Ficulneus ...	3	291	7	166*
gradatus ...	2	199	6	227
interruptus ...	3	304		181
labiatus ...	5	412	1, 2	11

	Vol.	Tab.	Fig.	Page.
Fusus latus ...	1	35		80
lavatus ...	5	412	3, 4	11
Lima ...	5	423	4	28
longævus ...	1	63		141
nodosus ...	6	578	4	152
porrectus ...	3	274	8, 9	132
pulcher ...	1	23		63
quadratus ...	5	410	1	7
regularis ...	2	187	2	195
	5	423	1	27
rugosus (porrectus) ...	3	274	8, 9	132
striatus ...	1	22		61
—— var. carinatus ...	2	109		13
trilineatus ...	1	35		80
tuberosus ...	3	229	1	51
Gastrochæna contorta ...	6	526	2	50
tortuosa ...	6	526	1	49
Gervillia acuta ...	6	510	5	15
aviculoides ...	1	66		147
	6	511		16
solenoides ...	6	510	1–4	14
Globulus acutus ...	3	284		151
Ambulacrum ...	4	372		97
depressus ...	1	5		21
helicoides ...	6	522	2	40
nobilis ...	6	522	1	39
patulus ...	3	284		152
sigaretinus ...	3	284		152
Goniatites Henslowi ...	3	262		111
Listeri ...	5	501	1	163
sphæricus ...	1	53	2	116
striatus ...	1	53	1	115
Gryphæa bilobata ...	2	149	2	113
bullata ...	4	368		93
canaliculata ...	1	26	1	68
Columba ...	4	383	1, 2	113
dilatata ...	2	149	1	113
dilatata β (bilobata) ...	2	149	2	113
gigantea ...	4	391		127
globosa ...	4	392		127
incurva ...	2	112	1, 2	23
MacCullochii ...	6	547	1–3	89
minuta ...	6	547	4	90
nana (Exogyra ...) ...	4	383	3	114
obliquata ...	2	112	3	24
sinuata ...	4	336		43
vesiculosa ...	4	369		93
Hamites adpressus ...	1	61	6	140
armatus ...	2	168		153
	3	234	2	59
attenuatus ...	1	61	4, 5	137
compressus ...	1	61	7, 8	138
gibbosus ...	1	62	4 r	140
Gigas ...	6	593	2	188
grandis ...	6	593	1	187
intermedius ...	1	62	2–4	139
maximus ...	1	62	1	138
nodosus ...	3	216	3	30
plicatilis ...	3	234	1	59
rotundus ...	1	61	2, 3	136
spiniger ...	3	216	2	29
spinulosus ...	3	216	1	29
tenuis ...	1	61	1	136
tuberculatus ...	3	216	4, 5	30
turgidus ...	3	216	6	30
Helicina compressa (Rotella ..) ...	1	10		33
expansa (Rotella ...) ...	3	273	1–3	129
polita (Rotella ...) ...	3	285		153
solarioides (Rotella ...)	3	273	4	129

	Vol.	Tab.	Fig.	Page.
Helix carinatus (Pleurotomaria .....)	1	10		34
cirriformis (Pleurotomaria .....)	2	171	2	160
Gentii (Natica .....)	2	145		101
globosus	2	170		157
striatus (Pleurotomaria...)	2	171	1	159
Hinnites Dubuissoni	5	601		210
Hinnus Dubuissoni	5	601		210
proboscideus	3	264		115
Hippopodium ponderosum.	3	250		91
Infundibulum echinatum	1	97	2	221
obliquum	1	97	1	220
rectum	1	97	3	219
spinulosum	1	97	6	220
tuberculatum	1	97	4, 5	221
Inoceramus Brongniarti	5	441	2, 3	60
concentricus	3	305		183
cordiformis	5	440		61
Cuvieri	5	441	1	59
digitatus	6	604	2	215
dubius	6	584	3	162
gryphæoides	6	584	1	161
involutus	6	583		161
latus	6	582	1	159
mytiloides	5	442		62
pictus	6	604	1	215
striatus	6	582	2	160
sulcatus	3	306		184
vetustus	6	584	2	162
Isocardia abrupta	1	89	2	200
concentrica	5	491	1	147
Cor	6	516	2	27
minima	3	295	1	91
oblonga	5	491	2	148
rostrata	3	295	3	172
similis	6	516	1	27
striata	1	89	1	199
sulcata	3	295	4	172
tenera	3	295	2	171
Lima antiquata	3	214	2	25
gibbosa	2	152		120
proboscidea (Hinnus.....)	3	264		115
rudis	3	214	1	25
Limnea columellaris	6	528	2	53
fusiformis	2	169	2, 3	155
longiscata	4	343		57
maxima	6	528	1	53
minima	2	169	1	156
pyramidalis	6	528	3	54
Lingula mytiloides	1	19	1, 2	55
ovalis	1	19	4	56
tenuis	1	19	3	55
Littorina carinata	3	240	3	69
conica	5	433	1	45
extensa	1	31	2	78
littorea	1	71	1	163
monilifera	4	395	1	131
muricata	3	240	4	70
ornata	3	240	1, 2	69
rotundata	5	433	2	45
rudis	1	71	2	164
sculpta	4	395	2	132
suboperta	1	31	6	80
Lucina antiquata	6	557	2	108
crassa	6	557	3	108
divaricata	5	417		18
mitis	6	557	1	107
Lutraria *ambigua* (Pholadomya .....)	3	227		48
Lutraria *angustata* (Pholadomya....)	4	327		29
carinifera	6	534	2	66
gibbosa (Panopea....)	1	42		91
lyrata (Pholadomya Fidicula)	3	225		47
oblata	6	534	3	66
ovalis (Pholadomya .....)	3	226		47
striata	6	534	1	65
Mactra arcuata	2	160	1–6	135
cuneata	2	160	7	136
dubia	2	160	2–4	136
ovalis	2	160	5	136
Magas pumilus	2	119		40
Megalodon cucullatus	6	568		132
Melania attenuata	6			52
constricta (Terebra .....)	3	218	2	33
costata	3	241	2	71
fasciata	3	241	1	71
heddingtonensis (Phasianella...)	1	39		86
lineata (Terebra.....)	3	218	1	33
minima	3	241	3	72
striata (Phasianella .....)	1	47		101
subulata	6			41
sulcata (Turritella...)	1	39		85
tricarinata	6			52
truncata	3	241	4	72
Melanopsis brevis	6	523	2	42
carinata	6	523	1	41, 52
fusiformis	4	332	1–7	35
subulata	4	332	8	36
Mitra parva	5	430	1	37
pumila	5	430	2	37
scabra	4	401		142
Modiola æqualis	3	210	2	18
aliformis (Perna...)	3	251		93
aspera	3	212	4	22
bipartita	3	210	3, 4	17
cuneata	3	211	1	19
depressa	1	8		29
elegans	1	9		31
gibbosa	3	211	2	19
Hillana	3	212	2	21
imbricata	3	212	1, 3	21
lævis	1	8		30
minima	3	210	5–7	19
pallida	1	8		30
parallela (Plagiostoma elongatum)	1	9		31
plicata	3	248	1	87
reniformis	3	211	3	20
Scalprum	3	248	2	87
subcarinata	3	210	1	17
Murex alveolatus	5	411	2	9
argutus (Triton .....)	4	344		59
bartonensis (Strombus ...)	1	34		77
bispinosus	5	416	2	15
Calcar	5	410	2	7
Carinella (Fusus .....)	2	187	3, 4	196
coniferus (Fusus....)	2	187	1	195
contrarius (Fusus.....)	1	23		63
corneus (Fusus.....)	1	35		79
coronatus	3	230	3	52
costellifer (Fusus.....)	2	199	3	225
cristatus	3	230	1, 2	52
curtus (Fusus....)	2	199	5	227
defossus	5	411	1	9
echinatus (Fusus....)	2	199	4	226
fistulosus (Typhis...)	2	189	1, 2	201

	Vol.	Tab.	Fig.	Page.
Murex frondosus	5	416	3	16
gradatus (Fusus.....)	2	199	6	227
Harpula	6	578	5	152
interruptus (Fusus.....)	3	304		181
latus (Fusus....)	1	35		80
minax	3	229	2	51
peruvianus	5	434	1	47
quadratus (Fusus...)	5	410	1	7
regularis (Fusus.....)	2	187	2	195
rugosus (Fusus costatus)	1	34		75
*rugosus*β (Fusus costatusβ)	2	199	1, 2	225
sexdentatus	5	411	3	10
Smithii (Pyrula.....)	6	578	1–3	151
striatus (Fusus....)	1	22		61
striatus β (*carinatus*) (Fusus.....)	2	109		13
tortuosus	5	434	2	48
tricarinatus	5	416	1	15
trilineatus (Fusus.....)	1	35		80
tuberosus (Fusus.....)	3	229	1	5
tuberosus (Fusus nodosus)	6	578	4	152
tubifer (Typhis pungens)	2	189	3–8	201
Mya angulifera	3	224	6, 7	46
? angustata	6	531	1	57, 59
arenaria	4	364		88
depressa	5	418		19
gibbosa (Panopea oblata)	5	419	1	19
gregaria (Potamomya ...)	4	363		87
intermedia (Panopea .....)	1	76	1	173
	5	419	2	20
	6	602	4	212
lata	1	81		185
literata	3	224	1	45
Mandibula	1	43		93
plana (Potamomya.....)	1	76	2	173
plicata (Panopea....)	5	419	3	20
Pullus	6	531	2	58
subangulata (Potamomya plana var.)	1	76	3	174
V-scripta	3	224	2–5	46
Myoconcha crassa	5	467		103
Mytilus affinis	6	532	1	59
aliformis	3	275	4	133
amplus (Pinna .....)	1	7		27
antiquorum	3	275	1–3	133
Brardii	6	532	1	60
edentulus	5	439	1	55
lanceolatus	5	439	2	55
pectinatus	3	282		147
sublævis	5	439	3	56
Nassa elongata	2	110	1	15
granulata	2	110	4	18
propinqua	5	477	2	121
reticosa	2	110	2	17
rugosa	2	110	3	16
Natica cirriformis	5	479	1	125
depressa (Globulus...)	1	5		21
Gentii	2	145		101
glaucinoides	1	5		19
	5	479	4	126
hantoniensis, *Trans. Linn. Soc.* VII. 118. t. XI. f. 10.	4	373		99
hemiclausa	5	479	2	125
patula	4	373		99
sigaretina	5	479	3	126
similis	1	5		20
striata (hantoniensis)	4	373		99
Nautilus biangulatus	5	458	2	84
bilobatus	3	249	2, 3	89
cariniferus	5	482	3, 4	130
Nautilus centralis	1	1		11
complanatus	3	261		109
compressus	1	38		84
Comptoni (Nummularia..)	2	121		45
Discus	1	13		39
elegans	2	116		33
excavatus	6	529	1	55
expansus	5	458	1	83
globatus	1	37		83
	5	481		129
hexagonus	6	529	2	55
imperialis	1	1		9
inæqualis	1	40		88
intermedius	2	125		53
lineatus	1	41		89
?minutus	1	53	3	116
multicarinatus	5	482	1, 2	129
obesus	2	124		51
pentagonus	3	249	1	89
polygonalis	6	530		56
radiatus	4	356		78
regalis	4	355		77
simplex	2	122		47
sinuatus	2	194		213
striatus	2	182		183
sulcatus	6	571	1, 2	137
truncatus	2	123		49
tuberculatus	3	249	4	90
undulatus	1	40		87
Woodwardii (Bellerophon .....)	6	571	3	138
ziczac	1	1		12
Nerita aperta	5	424	2–4	30
costata	5	463	5, 6	94
globosa	5	424	1	29
lævigata	3	217	1	31
minuta	5	463	3, 4	93
sinuosa	3	217	2	32
spirata	5	463	1, 2	93
Neritina concava	4	385	1–8	118
uniplicata	4	385	9, 10	118
Nucula amygdaloides	6	554	4	104
angulata	5	476	5	120
antiquata	5	475	4	118
claviformis	5	476	2	119
Cobboldiæ	2	180	2	177
deltoidea	6	554	1	103
impressa	5	475	3	118
inflata	6	554	2	103
Lachryma	5	476	3	119
lævigata	2	192	1, 2	207
lanceolata	2	180	1	178
minima	2	192	8, 9	209
mucronata	5	476	4	120
Ovum	5	476	1	118
Palmæ	5	475	1	117
pectinata	2	192	6, 7	209
similis	2	192	3, 4 10	207
trigona	2	192	5	208
variabilis	5	475	2	117
undulata	6	554	3	104
Nummularia Comptoni	2	121		45
elegans	6	538	2	76
lævigata	6	538	1	75
variolaria	6	538	3	76
Oliva aveniformis	1	99		225
Branderi	3	288		159
Salisburiana	3	288		160
Turritella	1	99		226
Orbicula granulata	6	506	3, 4	6

	Vol.	Tab.	Fig.	Page.
Orbicula Humphriesiana...	6	506	2	5
reflexa ...	6	506	1	4
Orthocera annulata ...	2	133		73
Breynii ...	1	60	5	132
cincta...	6	588	3	168
circularis ...	1	60	6, 7	133
conica (Belemnites elongatus) ...	1	60	1–3	131
cordiformis ...	3	247		85
fusiformis ...	6	588	1, 2	167
gigantea...	3	246		81
paradoxica...	5	457		81
Steinhaueri ...	1	60	4	132
striata...	1	58		129
teres ...	3	260	1, 2	108
undulata ...	1	59		130
Ostrea acuminata...	2	135	2, 3	78
bellovacina ...	4	388	1, 2	121
canaliculata ...	2	135	1	77
carinata ...	4	365		89
costata ...	5	488	3	143
deltoidea ...	2	148		111
dorsata ...	5	489	1, 2	144
edulina ...	4	388	3, 4	122
expansa ...	3	238	1	65
Flabellulum ...	3	253		97
gigantea...	1	64		143
gregaria...	2	111	1, 3	19
læviuscula...	5	488	1	143
macroptera ...	5	468	2, 3	105
Marshii ...	1	48		103
Meadei ...	3	252	1–4	95
obscura ...	5	488	2	143
Palmetta ...	2	111	2	20
pulchra ...	3	279		141
semiplana ...	5	489	3	144
solitaria ...	5	468	1	105
tenera...	3	252	2, 3	95
undulata ...	3	238	2	65
Ovulum Leathesi...	5	478		124
Pachymya Gigas ...	6	504 505		2
Paludina angulosa ...	2	175	1, 2	168
carinifera ...	6	509	3	12
concinna ...	1	31	4, 5	80
elongata...	6	509	1, 2	11
fluviorum ...	1	31	1	77
lenta ...	1	31	3	79
minuta ...	2	175	3	168
orbicularis (angulosa) ...	2	175	1, 2	167
Panopea Faujas ...	6	602	1–3, 5	212
gibbosa ...	1	42		91
gibbosa (oblata) ...	5	419	1	19
intermedia...	1	76	1	173
	5	419	2	20
	6	602	4	212
oblata.. ...	5	419	1	19
plicata ...	5	419	3	20
Patella æqualis ...	2	139	2	87
ancilloides...	5	484	2	134
lævis ...	2	139	3, 4	86
lata...	5	484	1	133
latissima ...	2	139	1, 5	85
Nana ...	5	484	3	134
rugosa ...	2	139	6	87
striata...	4	389		123
Unguis (Pileopsis ...) ...	2	139	7, 8	88
Pecten æquivalvis...	2	136	1	79
annulatus ...	6	542	1	80
arcuatus...	3	205	5, 7	4

	Vol.	Tab.	Fig.	Page.
Pecten asper ...	4	370	1	59
barbatus...	3	231		53
Beaveri ...	2	158		131
carinatus ...	6	575	4	145
cinctus ...	4	371		96
complanatus ...	6	586		164
corneus ...	3	204		1
dentatus...	6	574	1	143
duplicatus ...	6	575	1–3	145
fibrosus ...	2	136	2	80
gracilis ...	4	393	2	129
grandis ...	6	585		163
granosus ...	6	574	2	144
lamellosus...	3	239		67
laminatus ...	3	205	4	4
Lens ...	3	205	2, 3	3
nitidus ...	4	394	1	130
obliquus...	4	370	2	95
obscurus ...	3	205	1	3
obsoletus ...	6	541		79
orbicularis...	2	186		193
papyraceus...	4	354		75
plebeius...	4	393	1	129
plicatus ...	6	574	3	144
Princeps ...	6	542	2	80
quadricostatus ...	1	56	1, 2	121
quinquecostatus ...	1	56	3–8	122
reconditus ...	6	575	5, 6	146
rigidus ...	3	205	8	5
similis ...	3	205	6	5
striatus ...	4	394	2–4	130
sulcatus (plebeius) ...	4	393	1	129
vagans ...	6	543	3–5	82
vimineus ...	6	543	1, 2	81
Pectunculus brevirostris ...	5	472	1	112
costatus (deletus) ...	1	27	2	72
decussatus...	1	27	1	71
deletus ...	1	27	2	72
minimus ...	5	472	5	114
oblongus ...	5	472	6	114
plumsteadiensis...	1	27	3	72
scalaris ...	5	472	2	113
sublævis...	5	472	4	112
variabilis ...	5	471		111
umbonatus ...	2	156	2—4	128
	5	472	3	113
Pentamerus Aylesfordii ...	1	29		75*
Knightii ...	1	28		73*
lævis ...	1	28		76*
Perna aliformis...	3	251		93
aviculoides (Gervillia .....) ...	1	66		147
	6	511		16
quadrata ...	5	492		149
Petricola laminosa ...	6	573		142
Phasianella *angulosa* (Paludina...) ...	2	175	2	168
heddingtonensis ...	1	39		86
minuta (Paludina...) ...	2	175	3	168
orbicularis (Paludina..)...	2	175	1	167
striata...	1	47		101
Pholadomya acuticostata...	6	546	1, 2	88
æqualis ...	6	546	3	88
ambigua...	3	227		48
angustata ...	4	327		29
deltoidea ...	2	197	4	220
Fidicula...	3	225		47
lyrata...	2	197	3	220
margaritacea ...	3	297	1–3	175
Murchisoniæ...	3	297	4	
	6	545		87

	Vol.	Tab.	Fig.	Page.
Pholadomya obtusa	2	197	2	219
ovalis	3	226		47
producta	2	197	1	219
Pholas compressa	6	603		213
cylindrica	2	198		223
prisca	6	581		157
Pileolus lævis	5	432	5–8	43
plicatus	5	432	1–4	43
Pileopsis tubifera	6	607	4	224
Unguis	2	139	7, 8	88
vetusta	6	607	1–3	223
Pinna affinis	4	313	2	10
ampla	1	7		27
arcuata	4	313	3	10
granulata	4	347		65
lanceolata	3	281		145
tetragona	4	313	1	9
Plagiostoma cardiiforme	2	113	3	26
concentricum	6	559	1	113
duplicatum	6	559	3	114
elongatum	6	559	2	113
	1	9	1	31
giganteum	1	77		176
Hoperi	4	380		111
lævisculum	4	382		112
obscurum	2	114	2	28
ovale	2	114	3	27
pectinoides	2	114	4	28
punctatum	2	113	1, 2	25
rigidum	2	114	1	27
rusticum	4	381		111
spinosum	1	78		177
Planorbis *æqualis* (Euomphalus)	2	140	1	89
cylindricus	2	140	2	90
euomphalus	2	140	7–9	92
hemistoma	2	140	6	91
Lens	2	140	4	91
obtusus	2	140	3	91
radiatus (Vermetus)	2	140	5	92
Pleurotoma acuminata	2	146	4	105
attenuata	2	146	1	103
brevirostrum	4	387	2	120
Colon	2	146	7, 8	106
Comma	2	146	5	105
exorta	2	146	2	104
fusiformis	4	387	1	119
lævigata	4	387	3	120
Mitrula	4	375	3	103
prisca	4	386		119
rostrata	2	146	3	104
Semicolon	2	146	6	106
Pleurotomaria abbreviata	2	193	5	212
anglica	2	142		95
bicarinata	3	221	2	39
carinata	1	10		34
cirriformis	2	171	2	160
elongata	2	193	2–4	211
fasciata	3	220	1	37
Gibbsii	3	278	1	139
granulata	3	220	2	37
ornata	3	221	1	39
punctata	2	193	1	211
reticulata	3	272	2	128
striata	2	171	1	159
sulcata	3	220	3	38
Plicatula inflata	5	409	2	6
pectinoides	5	409	1	5
spinosa	3	245		79
maximus	6	606	3–6	222
Pollicipes reflexus	6	606	8	222
sulcatus	6	606	1, 2, 7	221
Potamides acutus	4	341	2	53
cinctus	4	340	1	51
concavus	4	339	1, 2	50
dubius	2	147	5	108
duplex	4	340	3	52
funatus	2	128		64
funiculatus	2	147	1, 2	107
intermedius	2	147	3, 4	107
margaritaceus	4	339	4	151
plicatus	4	340	2	52
politus	2	147	6, 7	109
	4	339	3	
rigidus	4	338		48
ventricosus	4	341	1	53
Potamomya plana	1	76	2	173
plana var.	1	76	3	174
gregaria (*Mya*...)	4	363		87
Producta aculeata	1	68	4	156
antiquata	4	317	1–5, 6	15
calva	6	560	2–6	115
comoïdes	4	329		31
concinna	4	318	1	16
costata	6	560	1	115
depressa	5	459	3	86
fimbriata	5	459	1	85
Flemingii	1	68	2	155
gigantea	4	320		19
hemisphærica	4	328		31
	6	561		117
horrida	4	319	1	17
humerosa	4	322		21
latissima	4	330		32
lobata	4	318	2–6	16
longispina	1	68	1	154
Martini	4	317	2–4	15
personata	4	321		20
plicatilis	5	459	2	85
punctata	4	323		22
scabricula	1	69	1	157
scotica	1	69	3	158
spinosa	1	69	2	157
spinulosa	1	68	3	155
sulcata	4	319	2	17
Psammobia solida	4	342		55
Purpura crispata	5	413		12
incrassata	5	414	2	13
tetragona	5	414	1	13
Pyrula Greenwoodii	5	498		157
nexilis	4	331		33
Smithii	6	578	1–3	151
Rissoa acuta	6	609	2	230
duplicata	6	609	4	230
lævis	6	609	1	229
obliquata	6	609	3	230
Rostellaria calcarata	4	349	6, 7	70
composita	6	558	2	111
lucida	1	91	1–3	203
macroptera	3	298		117
		299		
		300		
Parkinsoni (Sowerbii)	4	349	1–5	69
Parkinsoni	6	558	3	112
	1	75	4*	
Pes-Pelecani	6	558	1	109
rimosa	1	91	4–6	204

* We are indebted to Miss Benett for the correction here pointed out.

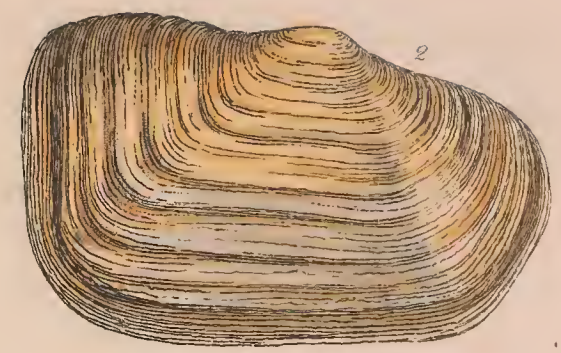
	Vol.	Tab.	Fig.	Page.
Rostellaria Sowerbyi ...	4	349	1–5	69
	6	558	3	
Rotella compressa	1	10		33
expansa	3	273	1–3	129
polita	3	285		153
solarioides	3	273	4	129
Sanguinolaria compressa ...	5	462		91
gibbosa	6	548	3	92
Hollowaysii	2	159		133
undulata	6	548	1, 2	91
Saxicava rugosa	5	466		101
Scalaria acuta	1	16		50
	6	577	2	149
foliacea	4	390	2	125
frondosa.....	6	577	1	149
interrupta	6	577	3	149
minuta	4	390	3, 4	125
reticulata	6	577	5	150
semicostata	1	16		50
	6	577	6	150
similis	1	16		49
subulata	4	390	1	125
undosa	6	577	4	150
Scaphites constrictus	2	A	1	189
æqualis	1	18	1–3	53
obliquus.....	1	18	4–7	54
Seraphs convolutus	3	286		155
Serpula ampullacea	6	597	1–5	199
antiquata	6	598	4	202
articulata	6	599	4	204
Carinella	6	598	2	201
compressa	6	598	3	201
crassa.....	1	30		73
fluctuata	6	608	5	228
granulata	6	597	7, 8	200
Macropus	6	597	6	200
obtusa	6	608	8	228
Plexus	6	598	1	201
runcinata	6	608	6	227
rustica	6	599	3	203
sulcata	6	608	1, 2	225
tenuis	6	598	5	
tetragona, α	6	599	1	203
tetragona, β	6	599	2	
triangulata.....	6	608	7	227
tricarinata	6	608	3, 4	226
vertebralis	6	599	5	204
Sigaretus canaliculatus.....	4	384		115
Solarium canaliculatum ...	6	524	1	43
conoideum.....	1	11		36
discoideum	1	11		36
patulum.....	1	11		35
plicatum	6	524	2	44
Solen affinis	1	3		15
Sphæra corrugata.....	4	335		42
Spirifer *ambiguus* (Atrypa...)	4	376		105
attenuatus	5	493	3–5	151
bisulcatus	5	494	1, 2	152
cuspidatus.....	2	120		42
	5	461	2	90
distans	5	494	3	152
glaber (Atrypa...).....	3	269	1	123
imbricatus..	4	334	3, 4	40
lineatus	4	334	1, 2	39
lineatus (radiatus).....	5	493	1, 2	151
minimus	4	377	1	105
oblatus (Atrypa ...)	3	268		123
obtusus (Atrypa...)	3	269	2	124
octoplicatus	6	562	2–4	120
pinguis	3	271		125

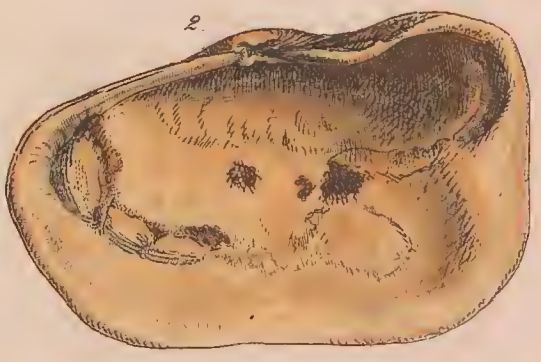
	Vol.	Tab.	Fig.	Page.
Spirifer radiatus	5	493	1, 2	151
resupinatus	4	325		25
rotundatus.....	5	461	1	89
striatus	3	270		125
triangularis	6	562	5, 6	120
trigonalis	3	265		117
undulatus	6	562	1	119
Walcotti	4	377	2	106
Strombus bartonensis	1	34		77
Tellina ambigua	4	403		144
Branderi	4	402	1	143
filosa	4	402	2	143
inæqualis	5	456	2	80
obliqua	2	161	1	137
obtusa	2	179	4	175
ovata	2	161	2	138
striatula.....	5	456	1	79
Terebellum fusiforme	3	287		157
Terebra constricta	3	218	2	33
lineata	3	218	1	33
Terebratula *acuminata* (Atrypa...)	4	324	1	23
	5	495	1, 3	153
acuta	2	150	1, 2	115
acuta (angulata)	5	502	4	166
affinis (Atrypa...).....	4	324	2	24
angulata.....	5	502	4	166
biplicata.....	1	90		201
	5	437	2, 3	53
bucculenta.....	5	438	2	54
bullata	5	435	4	49
carnea	1	15	5, 6	47
coarctata	4	312	1–4	7
concinna	1	83	6	192
cordiformis (Atrypa...)...	5	495	2, 4	154
cornuta	5	446	4	66
Crumena	1	83	2, 3	190
depressa.....	5	502	2	165
digona	1	96	1–3	217
digona, var.	1	96	4, 5	218
dimidiata	3	277	5	138
elongata.....	5	435	1, 2	49
emarginata	5	435	5	50
Fimbria...	4	326		27
Flabellulum	6	535	1	67
furcata	6	535	2	67
Gibbsiana	6	537	4	72
globata	5	436	1	51
hastata	5	446	2, 3	66
hemisphærica	6	536	1	69
imbricata (Spirifer...) ...	4	334	3, 4	40
inconstans.....	3	277	3, 4	137
indentata	5	445	2	65
intermedia.....	1	15	8	48
Lampas.....	1	101	3	228
lata.....	1	100		227
lata (latissima)	5	502	1	165
lateralis.....	1	83	1	189
latissima	5	502	1	165
lineata (Spirifer...)	4	334	1, 2	39
Lyra	2	138	2	83
Mantelliana	6	537	5	72
Mantiæ	3	277	1	137
maxillata	5	436	4	52
media (tetrahedra var.)...	1	83	5	191
nuciformis.....	5	502	3	166
obesa	5	438	1	54
obliqua	3	277	2	137
oblonga	6	535	4–6	68
obovata	1	101	5	228
obsoleta	1	83	7	192

	Vol.	Tab.	Fig.	Page.
Terebratula obtusa	5	437	4	53
actoplicata (plicatilis var.)	2	118	2	37
orbicularis	6	535	3	68
ornithocephala	1	101	1,2,4	227
ovata	1	15	3	46
ovoides	1	100		227
pectita	2	138	1	83
perovalis	5	436	2, 3	51
platyloba (Atrypa...)	5	496	5, 6	155
plicatella	5	503	1	167
plicatilis	2	118	1	37
plicatilis, var.	2	118	2	37
Pisum	6	536	6, 7	70
porrecta	6	576	1	147
Pugnus (Atrypa...)	5	497		155
punctata	1	15	2, 4	46
reniformis (Atrypa...)	5	496	1–4	154
resupinata	2	150	3, 4	116
resupinata (Spirifer...)	4	325		25
reticulata	4	312	5, 6	8
rigida	6	536	2	69
rostrata	6	537	1, 2	71
Sacculus	5	446	1	65
Sella	5	437	1	53
serrata	5	503	2	168
semiglobosa	1	15	9	48
sphæroïdalis	5	435	3	49
striatula	6	536	3–5	69
subrotunda	1	15	1	45
subundata	1	15	7	47
tetrahedra	1	83	4	191
tetrahedra, var.	1	83	5	191
triquetra	5	445	1	65
truncata	6	537	3	71
variabilis	6	576	2–5	148
Wilsoni	2	118	3	38
Teredo antenautæ	1	102	1,2,4–8	231
personata	1	102	3	
Thetis major	6	513	1–4	20
minor	3	209	1, 2	14
	6	513	5, 6	21
Trigonia affinis	3	208	3	11
aliformis	3	215		27
angulata	1	87		197
	6	508	1	9
clavellata	1	87		197
clavellata, var. (angulata)	1	87		197
costata	1	85		195
cuspidata	6	507	4, 5	8
dædalea	1	88		198
duplicata	3	237	4, 5	63
elongata	5	431		31
excentrica	3	208	1, 2	11
gibbosa	3	235		61
		236		
imbricata	6	507	2, 3	8
nodosa	6	507	1	7
pennata	3	237	6	64
Pullus	6	508	2, 3	10
spectabilis	6	544		183
spinosa	1	86		196
striata	3	237	1–3	63
Triton argutus	4	344		59
Trochus agglutinans	1	98		223
abbreviatus (Pleurotomaria....)	2	193	5	212
anglicus (Pleurotomaria...)	2	142		95
angulatus	2	181	3	180
Benettiæ	1	98		124
bicarinatus (Pleurotomaria...)	3	221	2	39
concavus (angulatus)	2	181	3	180
concavus (Sedgwicki)	3	272	1	127
dimidiatus	2	181	4	181
duplicatus	2	181	5	181
elongatus (Pleurotomaria..)	2	193	2–4	211
extensus	3	278	2, 3	140
fasciatus (Pleurotomaria..)	3	220	1	37
Gibbsii (Pleurotomaria...)	3	278	1	139
granulatus (Pleurotomaria...)	3	220	2	37
imbricatus	3	272	3, 4	127
lævigatus	2	181	1	179
monilifer	4	367		91
ornatus (Pleurotomaria...)	3	221	1	39
punctatus (Pleurotomaria....)	2	193	1	211
reticulatus (Pleurotomaria....)	3	272	2	128
Sedgwicki	3	272	1	127
similis	2	181	2	179
sulcatus (Pleurotomaria..)	3	220	3	38
Turbo *carinatus* (Littorina...)	3	240	3	69
conicus (Littorina...)	5	433	1	45
littoreus (Littorina ..)	1	71	1	163
moniliferus (Littorina...)	4	395	1	131
muricatus (Littorina...)	3	240	4	70
obtusus	6	551	2	97
ornatus (Littorina...)	3	240	1, 2	69
rotundatus (Littorina...)	5	433	2	45
rudis (Littorina...)	1	71	2	164
sculptus (Littorina...)	4	395	2	132
Tiara	6	551	1	97
Turrilites costatus	1	36		81
obliquus (Rostellaria Parkinsoni)	1	75	4	172
tuberculatus	1	74		169
undulatus	1	75	1–3	171
Turritella abbreviata	6	565	2	125
brevis	1	51	3	110
cingenda	5	499	3	159
concava (excavata)	6	565	5	126
conoidea	1	51	1,4, 5	109
costata	6	565	4	126
edita	1	51	7	111
elongata	1	51	2	110
excavata	6	565	5	126
granulata	6	565	1	125
incrassata	1	51	6	111
muricata	5	499	1, 2	159
sulcata	1	39		85
Terebra	6	565	3	126
Typhis fistulosus	2	189	1, 2	201
muticus	2	189	6, 7	202
pungens	2	189	3–5,8	201
Unio acutus	1	33	5–7	84
aduncus	6	595	2	190
antiquus	6	594	3–5	190
compressus	6	594	2	189
concinnus	3	223		43
cordiformis	6	595	1	191
crassissimus	2	153		121
crassiusculus	2	185		191
hybridus	2	154	2	124
Listeri	2	154	1, 3,4	123
porrectus	6	594	1	189
Solandri	6	517		29
subconstrictus	1	33	1–3	83

	Vol.	Tab.	Fig.	Page.
Unio uniformis	1	33	4	83
Venericardia carinata	3	259	2	106
chamæformis	5	490	1	145
deltoidea	3	259	1	106
dubia	3	259	3	106
globosa	3	289	1	161
oblonga	3	289	2	162
orbicularis	5	490	2	145
planicosta	1	50		107
scalaris	5	490	3	146
senilis	3	258		105
Venus *angulata* (Cyprina....)	1	65		145
æqualis (Cyprina...)	1	21		59
caperata	6	518	1–3	31
elegans	5	422	3	26
Faba	6	567	3	129
gibbosa	2	155	3, 4	126
incrassata	2	155	1, 2	126
lentiformis	2	203		235
lineolata	1	20		57
lineolata (Solandri)	5	422	2	25
ovalis	6	567	1, 2	129
parva	6	518	4–6	32
pectinifera	5	422	4	26
plana	1	20		58
rustica	2	196		217
Solandri	5	422	2	25
transversa	5	422	1	25
turgida	3	256		101
varicosa	3	296		173
bognoriensis	6	596	1–3	194
concavus	1	57	1–5	125
Vermetus concinnus	6	596	5	195
ovatus	1	57	8	126
polygonalis	6	596	6	196
radiatus	2	140	5	92
tumidus	6	596	4	195
umbonatus	1	57	6, 7	126
Vermicularia concava (Vermetus....)	1	57	1–5	125
ovata (Vermetus....)	1	57	8	126
umbonata (Vermetus...)	1	57	6, 7	126
Vivipara concinna (Paludina....)	1	31	4, 5	80
extensa (Littorina...)	1	31	2	78
fluviorum (Paludina.....)	1	31	1	77
lenta (Paludina ...)	1	31	3	79
suboperta (Littorina....)	1	31	6	80
Voluta ambigua	4	399	1	135
ambigua var. (suspensa)	2	115	5	31
Athleta	4	396	1–3	133
costata	3	290	1, 2, 4	163
depauperata	4	396	4	133
geminata	4	398	1	136
Lamberti	2	129		65
Lima	4	398	2	136
Luctator	2	115	1	29
	4	397		134
Magorum	3	290	3	164
nodosa	4	399	2	135
spinosa	2	115	2, 4	30
suspensa	2	115	5	31
Volvaria acutiuscula	5	487		142

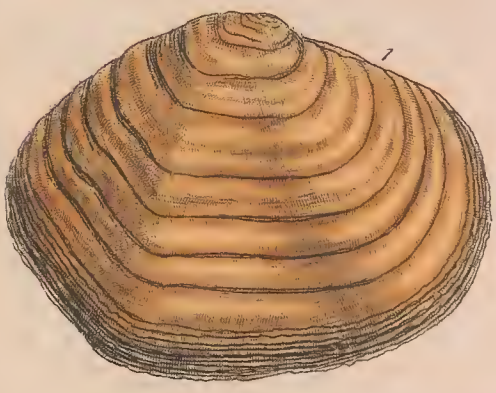
*** The names printed in Italic letters are those given in the body of the work but which require alteration. If the alteration be in the generic name, that name, followed by several dots, is placed in a parenthesis; if it be the specific name that requires alteration, the new name is given without dots in the parenthesis.



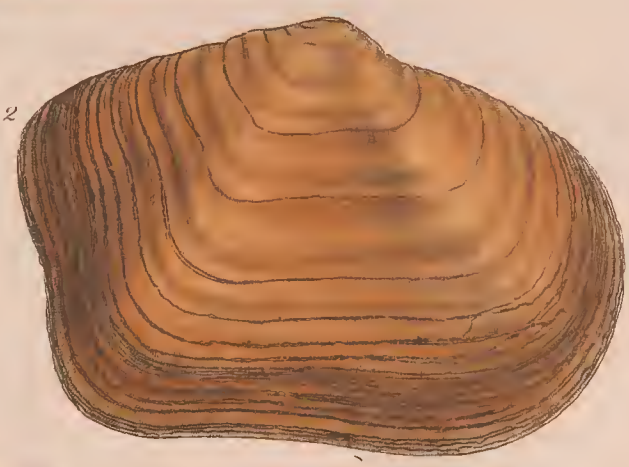


1. Panopæa gentilis.
2. Norvegica.

3



1

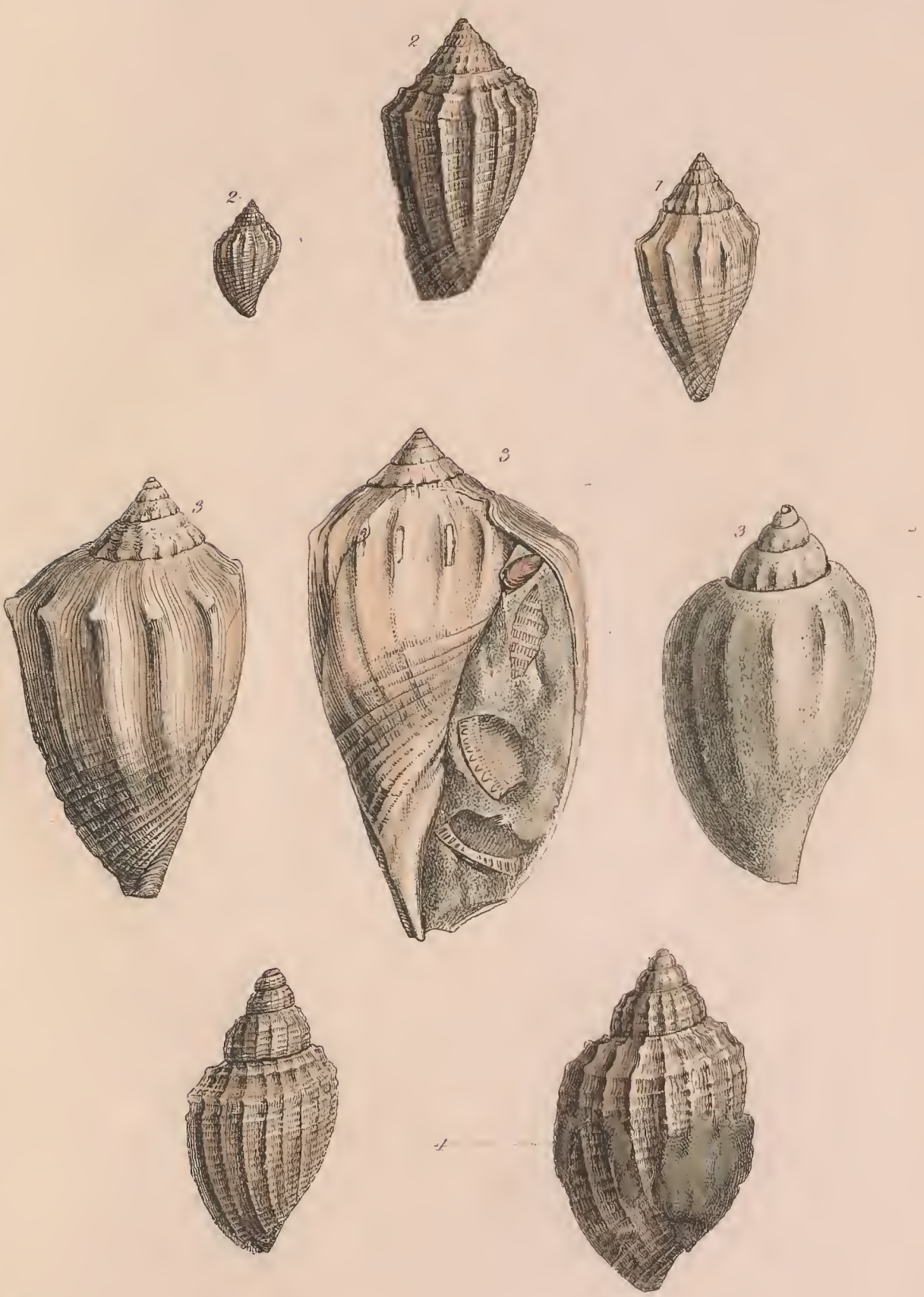


2

4

1. 2. Panopæa Norvegica.
3. 4. .. .. Ipsvicensis.

1 to 5. Voluta Vetherellii.
6. 7. ... ... protensa.



1. Voluta nodosa, Vanuxem.
2 brevona.
3. denudata.
4. elevata

PANOPÆA gentilis.

TAB. DCX.—*fig.* 1.

SPEC. CHAR. Transversely ovato-elongated, flattened on the sides, nearly even, slender; posterior half rather pointed, the other rounded and expanded upwards; umbones nearly central; both extremities slightly gaping; width nearly twice the length.

THIS resembles P. Basteroti of Valenciennes, which is found near Bordeaux, but the umbones are more nearly central; it is an elegantly formed shell, and apparently a distinct species. Two views are given of the only valve which has been obtained. It is in the collection of Mr. S. V. Wood, who found it in Crag at Alderton, near Bawdsay, above ten years ago.

PANOPÆA Norvegica, var. nana.

TAB. DCX.—*fig.* 2, *and* DCXI.—*figs.* 1 *and* 2.

SPEC. CHAR. Transversely oblong, compressed, thick, the posterior extremity largely truncated; surface divided into three parts by two diverging, longitudinal slight elevations; beaks nearly central; muscular impressions deep, those of the mantle large, unconnected; the sinus shallow and not complete.

SYN. Mya Norvegica, *Spengler Act. Soc. d'Hist. Nat. Copenh.* 46. *Pl. II. f.* 18. Mya Glycimeris, *Donovan Brit. Shells t.* 142. Glycimeris arctica, *Lam. Hist. Nat. vol.* 6. 458. *Lam. Hist. Nat. ed.* 2. *vol.* 6. 68. *note.* Panopæa Glycimeris, *Turton Brit. Bivalves* 42. *Bean*

in Mag. Nat. Hist. vol. 8. 562. P. Bivonæ, *Phill. Enum. Moll. Sicil.* 8. *Pl. II. f.* 1. *Smith, Mem. Wern. Soc. vol. VIII.* 23, 45 *and* 49. *t.* 2. *f.* 4. P. Spengleri, *Valenc. Arch. du Mus. d'Hist. Nat. vol.* 15 *and* 34. *Pl. V. f.* 3.

Var. β. Nana. Flatter and smaller than α.

This Panopæa varies much in form, sometimes being truncated in one direction and sometimes in another, at other times being hardly truncated at all. The var. α is living in the northern seas of Europe*; it is also found fossil on the Isle of Bute and at Palermo. The var. β, which is the one before us, is found in the Red Crag at Sutton; its small size indicates that it had not been in a congenial situation for some time before it ceased to live; it is also often variously thickened and distorted, but not so much so as several of the large variety, which occur in their natural position in the sandy clay raised above the level of the sea on the shore at Ruduback Farm on the Isle of Bute, where they were found by Mr. G. B. Sowerby in company with James Smith, Esq. of Jordan Hill, in 1838. (See the Transactions of the Wernerian Society above-quoted.)

The large as well as the small varieties are subject to a diseased thickening of the shell, and seem to have struggled against a change of circumstances, (we can hardly suppose of climate,) unless it were an increased temperature, for the species is still found living and healthy in the northern seas, where it appears to thrive in deep water, and would probably be rendered sickly by being brought into shallow water, or perhaps by an accession of fresh water.

The specimens I have from Palermo do not appear so much diseased; they were probably more suddenly acted upon. The dwarf variety before us had perhaps been long subjected to such a change as we have spoken of before the disturbance took place that reduced it to the same state as the older Crag Fossils scattered upon the shores where it supported a feeble existence with difficulty.

* Shells dredged up on the Yorkshire coast are made into snuff-boxes by the fishermen.

PANOPÆA Ipsviciensis.

TAB. DCXI.—*figs. 3 and 4.*

SPEC. CHAR. Subcylindrical, rather compressed, undulated, thin, anteriorly rounded or obliquely rotundato-truncate, posteriorly truncated, gaping. Beaks central.

SYN. Panopæa Ipsviciensis, *Valenc. Arch. du Mus. d'Hist. Nat. vol. I.* 28 *and* 36. P. Faujasii, *Supra, t.* 602. *figs.* 3 *and* 5.

THIS species is justly distinguished by Prof. Valenciennes from P. Faujasii of Sicily, which is a much more ventricose and oval shell; he also separates it from the shell represented in the upper figure of Tab. 602 of this work, which he has named P. Sowerbyi. If that be really different from P. Ipsviciensis, it will be known by being flatter, and having the umbones nearer the anterior side; but it is evidently a crushed specimen.

Found abundantly in the Coralline Crag at Ramsholt, but rarely perfect; also at Ipswich and other places in Suffolk. The specimen figured enriches Mr. S. V. Wood's cabinet.

In the following list of all the fossil species of Panopæa some errors that have been published are corrected.

1. Panopæa Aldrovandi (Menard). Chama Glycimeris altera, *Aldrovandus Test. lib.* 3. 473. *Lister Conch. t.* 414. *f.* 258. Mya Glycimeris, *Gmel.* 3222. *Chemnitz Conch.* 6. *t.* 3. *f.* 25. Panopæa Aldrovandi, *Menard de la Groye, Ann. du Musée,* 9. 131. *Lam. Hist. Nat.* 5. 457. *Phil. Enum. Moll. Sicil.* 7. *t.* 2. *f.* 2. *a. b. Valenciennes, Arch. du Mus. d'Hist. Nat.* 1. 22 *and* 35. *pl.* 4. *f.* 1. *a. and b.*
2. P. Faujasii, (Menard). Panopæa Faujasii, *Menard l. c.* 131. *t.* 12. *Phil. l. c.* 7. *t.* 2. *f.* 3. *Valenc. l. c.* 13 *and* 35. Mya Panopæa, *Brocchi* 532. Panopæa Aldrovandi foss., *Lam. Hist. Nat.* 5. 457.
3. P. Ipsviciensis (Valenc.). P. Faujasii, *M. C.* 602. *f.* 3

and 5. P. Ipsviciensis, *Valencienn. l. c.* 28 *and* 36. *M. C.* 611. *f.* 3 *and* 4.

4. P. reflexa (Say). *Philadel. Journal*, 4. 153. *pl.* 13. *f.* 4. *Valenc. l. c.* 26. P. Americana, *Wagner. Bronn. Leth.* 974.

5. P. Menardi (Desh.). P. Faujasii, *Basterot Mem. de la Soc. d'Hist. Nat.* 2. 95. P. Menardi, *Dujardin, Mem. de la Soc. Geol. de France, vol. II*, 255. *Bronn. Lethæa*, 974. P. Basteroti, *Valenc. l. c.* 22 *and* 35. *pl.* 6. *f.* 2. *ab.*

6. P. gentilis, *M. C.* 610. *f.* 1.

7. P. Rudolphii (Eichwald). Panopæa Faujasii, *Du Bois Conch. Foss. Wolhyni-podolien.* 51. *pl.* 4. *f.* 1—4. P. Rudolphii, *Eichwald, Naturh-Scizze* 204. *Valenc. l. c.* 24 *and* 35. *pl.* 5. *f.* 1. *a. b.*

8. P. intermedia (M. C.). Mya intermedia, *M. C.* 76. *f.* 1. *and* 419. *f.* 2. Panopæa intermedia, *M. C. v.* 6. 211. *t.* 602. *f.* 4. Corbula dubia, *Deshayes Cocquilles de Paris, V. I.* 59. *pl.* 9. *f.* 13 *and* 14. P. Deshayesii, *Valenc. l. c.* 20 *and* 35. *pl.* 4. *f.* 2. *a. b.*

9. P. plicata, M. C. 419. *f.* 3. P. Deshayesii var. *Valenc. l. c.* 20 *and* 35.

10. P. Sowerbyi, *Valenc. l. c.* 27 *and* 36. P. Faujasii, *M. C.* 602. *f.* 1. 2.

11. P. oblata (M. C. Index). Mya gibbosa, *M. C. t.* 419. *f.* 1.

12. P. gibbosa (M. C.). Lutraria gibbosa, *M. C. t.* 42. Panopæa gibbosa, *M. C. vol.* 6. 211. Panopæa Agassizii, *Valenciennes, l. c.* 31.

13. P. subsinuosa, *Valenc. l. c.* 31.

14. P. Norvegica, *M. C. supra vol.* 7. 1. 610. 611.

15. P.? abrupta (Valenc.). Pholadomya abrupta, *Conrad Fossil Shells of N. America, v.* 1. *t.* 12. P. abrupta, *Valenc. l. c.* 28.

16. P.? margaritacea (Valenc.). Glycimeris margaritacea, *Lam. Hist. Nat. v.* 5. 458. Clavagella Lodoisca, *Caillat Ann. Soc. des Sciences de Seine et Oise, pl.* 9. *f.* 9. *Lam. Hist. Nat. ed.* 2. *v.* 6. 68. *note.* Panopæa margaritacea, *Valenc. l. c.* 29 *and* 35. *pl.* 5. *f.* 2. *a. b.*

Of the above P. Aldrovandi and P. Norvegica are also found living, the first in the Mediterranean Sea, and the latter in the Northern Ocean. Three other living species are described besides these.

VOLUTA Wetherellii.

TAB. DCXII.—*figs.* 1 *to* 5.

Spec. Char. Fusiform, elongated, smooth or very finely and spirally striated; plaits on the columella about three; apex obtuse; volutions elliptical.

Syn. V. Wetherellii, *Sowerby in Phil. Mag. and Journ. of Science, 3rd Series, v.* 9. 463.

A more elongated shell than V. Lamberti, Tab. 129: the pullus (figs. 1 and 2) appears to have been about the size of a small pea. As the animal grows, elevated striæ, which are conspicuous on the young shell, cease to be formed, and the surface is smooth and even.

Many specimens have been obtained from the clay during the formation of the London extremity of the Birmingham Railroad, near Camden Town; it has also been found at Bayswater, Brentford, and on the Isle of Sheppey, but it did not occur at Highgate. Figs. 1, 2 and 4 are from specimens in the cabinet of N. T. Wetherell, Esq., to whom I have had the pleasure of dedicating it; fig. 5 represents a specimen preserved by the late H. Woods, Esq., while he resided in Camden Town.

VOLUTA protensa.

TAB. DCXII.—*figs.* 6 *and* 7.

Spec. Char. Fusiform, elongated, costated, and transversely striated; volutions rather conical.

The form of the volutions and the costæ, which however are less conspicuous on the last-formed whorls, distinguish this from the V. Wetherellii.

From the Birmingham Railroad with the last, rare. Mr. Wetherell's museum.

VOLUTA tricorona.

TAB. DCXIII.—*fig.* 2.

Spec. Char. Ovato-rhomboidal, transversely striated, costated, spire short, acute; whorls crowned by three rows of short spines; costæ thin, as long as the volutions.

This Volute is distinguished at first sight by its sharp ribs, each of which has three very short spines upon its upper part, and by the striæ extending over the whole of the whorl.

Collected from the clay at Primrose Hill, near Camden Town, with the two preceding species, by Mr. Wetherell: it is rare.

Fig. 1. represents a young specimen of V. nodosa, Tab. 399, for comparison; it is from Highgate, where it was not uncommon.

VOLUTA denudata.

TAB. DCXIII.—*fig.* 3.

Spec. Char. Elliptical, ribbed; ribs short, thick, with a short spine near the upper part of each; lower part of the whorl striated; inner lip thick, extending far over the whorl; columella with several irregular plaits.

Well distinguished by its oval form, smooth surface and the thick inner lip; it resembles Voluta rarispina, Lam.; but that shell has longer spines, a less regular form, and is much more strongly striated near the beak.

This shell has long been known in the sandstone of the Bognor Rocks; but until Mr. Bowerbank, with much perseverance, cleared a series of good specimens, it had not been recognised as a species; one individual, cleared since the figure was engraved, measures three inches long. The same species has also been found at Brentford, but it is rare.

VOLUTA elevata.

TAB. DCXIII.—*fig.* 4.

Spec. Char. Elliptical elongated; transversely striated, costated; spire produced; the whorls convex, their upper parts deeply furrowed and crowned with rows of small spines between the furrows.

The elongated spire distinguishes this from all the Volutes which approach it in general appearance.

Found by Mr. Wetherell at the Railroad, near Camden Town; it is rare.

VOLUTA Harpula.

TAB. DCXIV.—*fig.* 1.

Spec. Char. Ovate-fusiform, longitudinally costated, the upper edges of the whorls crenated; the suture defined; columella many-plaited, the three lower plaits large, the last but one largest; aperture oval, truncated at the base.

Syn. Voluta Harpula, *Lam. Hist. Nat. vol.* 7. 352. *Deshayes Coquilles Foss. vol.* 2. 702. *pl.* 91. *f.* 10. 11.

This Volute appears to vary in form with its locality. The English specimens have the costæ obtuse, and gradually lost towards the base of the last whorl, while in those from Grignon the elegantly curved costæ are sharp and complete to the very edge of the aperture. The fine striæ which cross the ribs are also more conspicuous in the British variety. The lip is thickened when full-grown in both.

A rare shell at Barton. I am indebted to Mr. Lowry for the only specimen I have seen.

VOLUTA Labrella.

TAB. DCXIV.—*fig.* 2.

Spec. Char. Ovate-turbinate, ventricose, transversely furrowed towards the pointed base; upper part of the last whorl more or less keel-shaped; spire short, distinct from the last whorl, imperfectly ribbed, each rib divided into several spines which are gradually lost towards the last whorl; columella with one large and several small plaits; aperture much elongated, 3-angled; the inner lip tumid above.

Syn. Voluta Labrella, *Lam. Hist. Nat. vol.* 7. 353. *Deshayes Coquilles Foss. Vol. I.* 694, *pl.* 91. *f.* 1—6.

The French specimens of this species are generally much more carinated than the English ones, but even in them the keel varies in sharpness: the difference between young shells from the two countries is very slight. In the English full-grown shell the keel is broad, rounded and not distinct from the body of the whorl, which is nearly even and smooth except toward the base. The swelled inner lip appears to be an important character.

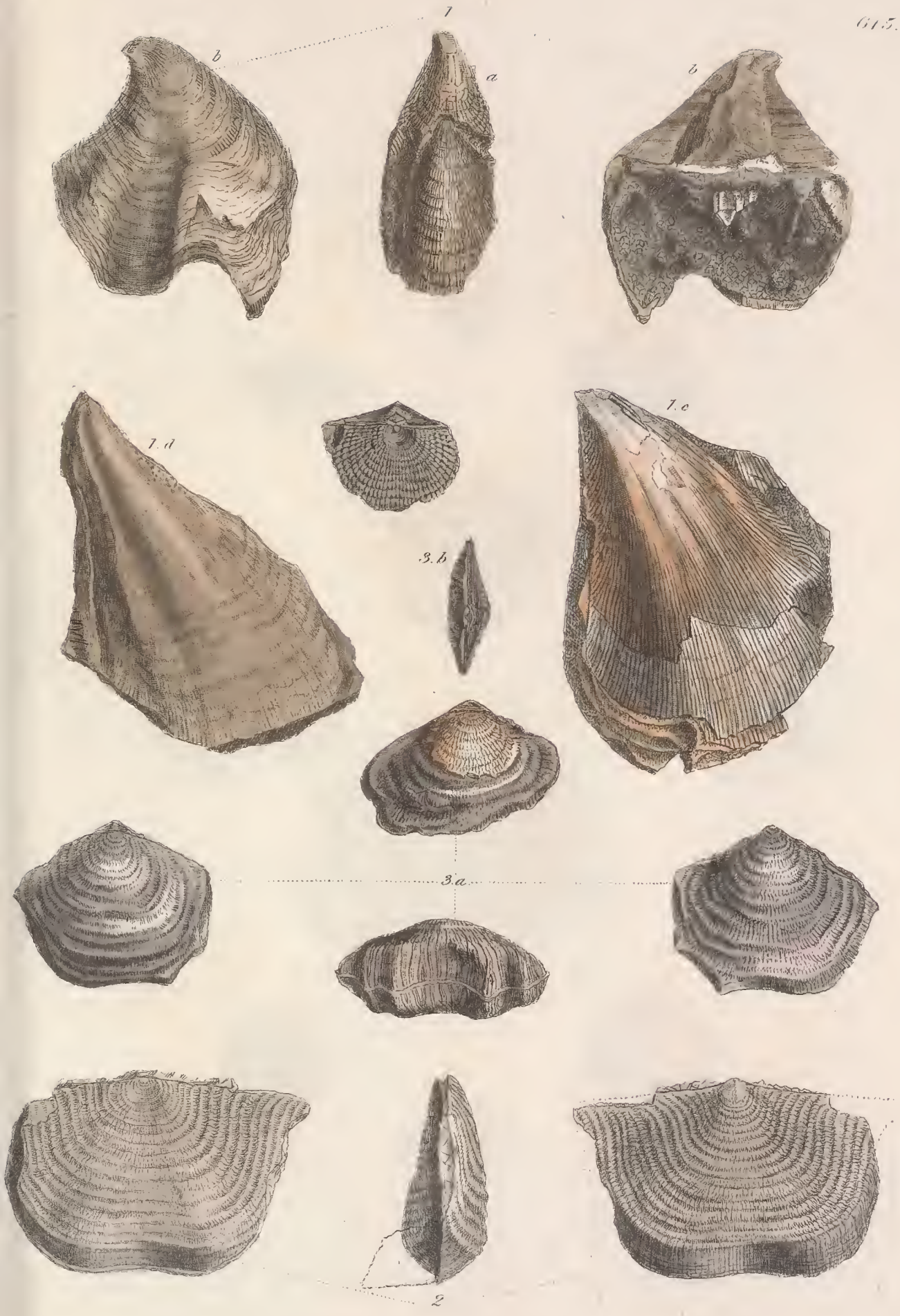
Specimens of this shell in various stages of growth have been lately collected in Bracklesham Bay, by J. S. Bowerbank, Esq. It is a valuable addition to the list of British tertiary Fossils, which resemble those of France. It is accompanied by Cerithium Cornu-copia, C. giganteum, Ovula tuberculosa, *Desh.*, and many undescribed shells.

1

2

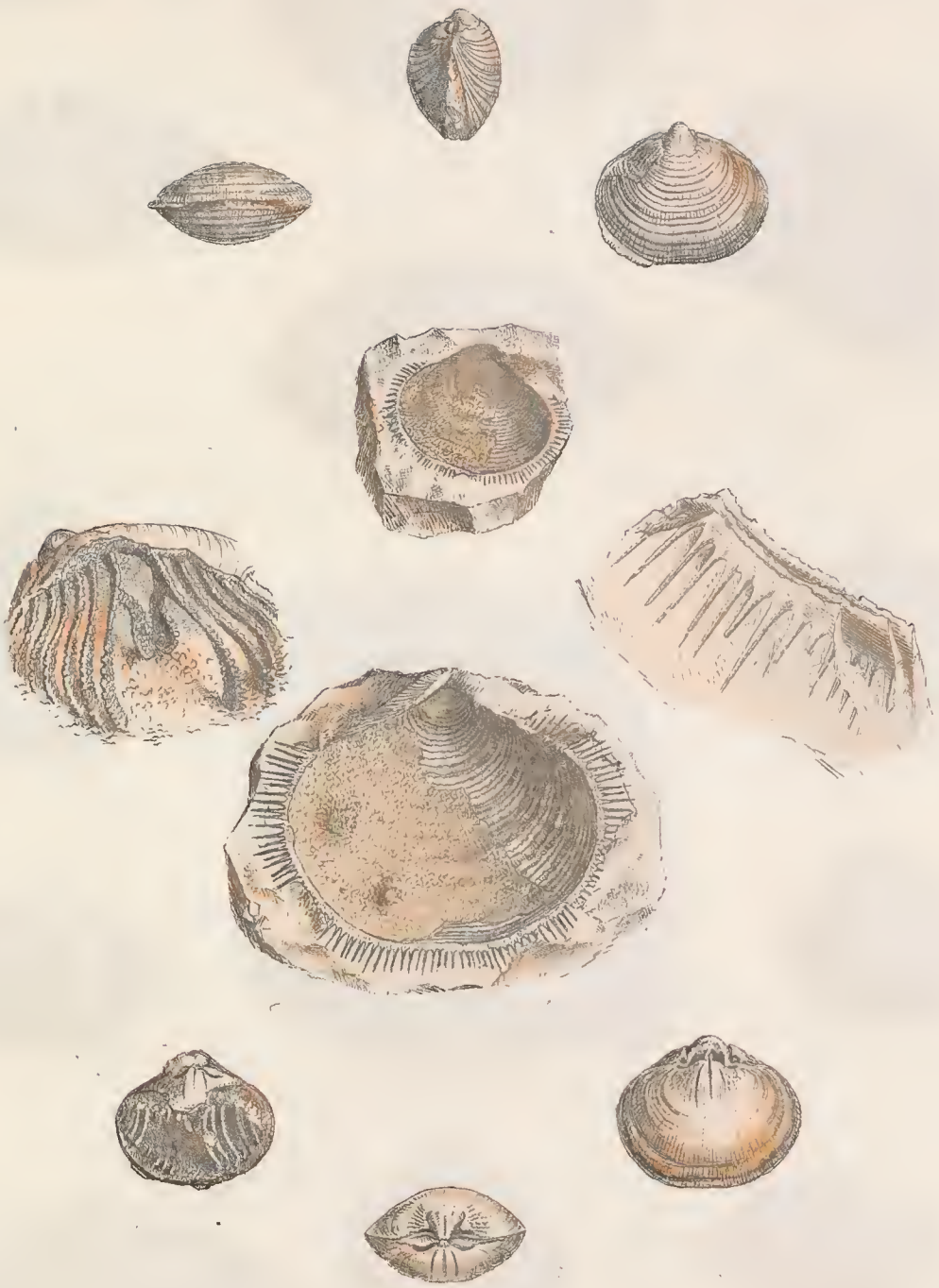
1. Voluta Harpula.
2. ..... Lubrella.

Oct.r 1st 1840.



1. *Leptæna anomala.*
2. ..... *analoga.*
3. *Leptæna distorta.*

Oct.r 1st 1840



Atrypa pectinifera.

Oct.r 1st 1840.

1. Atrypa expansa.
2. ..... plano-sulcata.
3. Atrypa oblonga.
4. .... fimbriata.

Teredo articulata.

Oct.r 1st 1840.

LEPTÆNA, Dalman.

Objections have been so strongly urged against the name Productus, that we have found it necessary to adopt Dalman's name Leptæna for this genus. It is characterized by the hinge-area in each valve extending the whole width of the shell, and by the margins of the valves being produced together beyond that part of the shell which contains the animal, and bent down so as to form a kind of inverted cup. The flatter (lower) valve has no projecting beak, but in the middle of its hinge-line is a process which nearly fits the aperture in the convex deltidium of the other valve, which slides upon it as it opens or closes; this process is divided within into two diverging teeth. The same valve has a smaller longitudinal septum in its middle, between the muscular impressions. The beak of the (upper) convex valve is in some species produced considerably. All the species have striated surfaces, and many have long spines, often tubular, on the outside, and numerous little spine-like projections within.

LEPTÆNA anomala.

TAB. DCXV.—*fig.* 1.

Spec. Char. Irregularly triangular, elongated, compressed, striated; beak very much produced, its sides spinose; hinge-area large, triangular.

Syn. Pinna inflata. *Phillips, Geol. Yorks. Part II.* 211. *Pl. VI. f.* 1. Mytilus striatus. *Fischer, Orycht. Mosc.* 181. *Pl. XIX. f.* 4.

A very irregular and often distorted shell, with a surface and texture precisely similar to that of *Leptæna scabricula* and the other species of the genus.

Individuals rarely occur separate: they are commonly distorted, broken, and imbedded one in another, which renders them very difficult to comprehend. The spines near the hinge are small, they are best defined in fig. a.; their bases are seen on the internal cast (fig. d.). Figs. b b. are two views of one specimen, which shows the large area beneath the beak, an approach to which is seen at fig. 3 b. Those found in Russia are often much larger and less elongated, therefore more resembling the ordinary form of Leptæna. The specimen represented at fig. 1 c, is in Mr. Gilbertson's cabinet; it is from the mountain limestone of Bolland. I am not acquainted with the localities of the others.

LEPTÆNA analoga.

TAB. DCXV.—*fig.* 2.

Spec. Char. Nearly semicircular, with the front either straightish or concave, much depressed near the beak; both valves inflated towards the front, their margins suddenly deflected; lower valve flat near the beak; surface ornamented with diverging striæ and concentrically undulated; waves numerous; hinge-line bent, its area very narrow; beak pointed, hardly projecting.

Syn. Producta analoga. *Phillips, loc. cit.* 215. *Pl. VII. f.* 10.

This shell grows much larger than the *L. depressa* (Tab. 459); its valves are more similar, both being inflated towards the front, and its outline more rounded; otherwise it strongly resembles it. The area between the valves is very narrow.

It is possible that it may be the *L. rugosa* of Dalman; but the specimens I have seen from Sweden are most like *L. depressa*, a shell which I believe never occurs above the limestone of the Devonian system. Rather frequent in the mountain limestone of the North of England and in Ireland.

LEPTÆNA distorta.

TAB. DCXV.—*fig.* 3.

Spec. Char. Irregularly orbicular, concentrically waved, striated; front generally concave, the margin flattened; hinge-line straight, its area triangular; beak prominent.

A thicker shell than *L. analoga*; well distinguished by its projecting beak, very convex valves, which are not compressed near the beak, and its smaller size.

I suspect this is *P. depressa* of Phillips, 215. Pl. VIII. f. 15; but as he says he cannot distinguish his specimens from *P. depressa* of the Dudley limestone, I have not ventured to quote his name as a synonym. The specimens fig. a. are from the Isle of Man, by favour of Mr. Gilbertson. The middle figure shows the impressions attributed to the ovaria; similar ones are frequent in casts of other species of this genus, especially *L. analoga*. Fig. 3 b. shows the area of the hinge in both valves. It is probably from Scotland.

It is important to distinguish the two last species from *L. depressa*, which belongs to the rocks of the Silurian system, and it may readily be done with a little practice.

ATRYPA, Dalman.

Gen. Char. Shell equilateral, unequal-valved, with both valves convex; hinge furnished with two spiral appendages, its margin short, arched; the area between the beaks small, generally convex, rarely flat, with a triangular pit or notch in the middle, closed by a *deltidium* admitting the smaller beak; beaks pointed, incurved; animal a Brachiopodous Mollusk.

The shells to which Dalman has given the generic name Atrypa, because they have no circular aperture at the extremity of the larger beak, although in general appearance they resemble Terebratulæ, were placed by the late Mr. Sowerby in his genus Spirifer. They form a very natural genus, which may be divided into several sections. Hisinger makes two,—"Striatæ and Lævigatæ;" we would prefer dividing the latter into two, and shall then have three sections, viz.,

1st. Not striated longitudinally, and with the edges of the valves on one plane. (Cardinal area none.)

2nd. Not striated longitudinally, and with the front of the larger valve elevated.

3rd. Striated or plaited longitudinally.

The first section contains some of the "Spiriferæ Terebratuliformes" of Phillips; the second, the remainder of these, and his "Glabratæ;" and the third, the "Filosæ" of the same author. Several species of the two first sections are ornamented with concentric laminæ or fringes, and among the latter are some with imbricating scales on the surface. Most of the species have two longitudinal septa in the beak of the larger valve and one in the other; these are very broad in some of the species belonging to the second section (by which circumstance they approach the genus Pentamerus); in others they are reduced to mere

lines, with a thick tongue-like process between the two in the larger valve.

The small size of the area between the beaks, and the short hinge-line, distinguish this genus from Spirifer, but there is evidently a passage from one into the other; there can, however, be no difficulty in distinguishing the genus Terebratula from both, if attention be paid to the structure of the beaks, the deltidium, the texture of the shell (which in Terebratula is punctato-laminated,—a distinction first pointed out by Mr. Morris), and the general habit. The deltidium in the genus Terebratula is generally formed of two pieces, and always opens at the extremity of the beak, or (as Von Buch describes it) separates the muscle of attachment from the hinge-line of the larger valve, hence the circular aperture; but in Atrypa, Spirifer, Orthis and Leptæna, it is composed of one immoveable piece filling up the beak, but sometimes leaving a sinus in the middle of the hinge-line. In many species, especially of the genera Atrypa and Spirifer, it is concave, and admits the beak of the lesser valve to repose upon it; in others it is flat. Von Buch has mixed the species of the genus Atrypa with Terebratula; he would have done better to have united them with Delthyris, under which he includes Spirifer; for whenever there is an opening in the deltidium, it is a sinus on the hinge-line, and not close to the apex of the beak, as in Terebratula, which natural genus alone comes under his definition. The flat area on each side the deltidium is variable in size in all the genera which possess it: the species of Atrypa in which it is found have it much less than the width of the shell, and bounded by the curved surface of the beak. In Leptæna and Orthis it is equal to the width of the shell, and occupies the whole inner curve of the beak; a similar but smaller area occurs in the other valve. The genus Pentamerus (*Gypidia Conchidium*, Dalm.) is the most difficult to distinguish from Atrypa, and requires further consideration; it, however, is perfectly distinct from Terebratula, with which Von Buch

has arranged it. But it seems that he has confounded Strigocephalus and Uncites of Defrance with Pentamerus, from which they are really distinct, and placed Gypidia (to which genus Goldfuss has referred *Uncites Gryphus* of Defrance) under Delthyris, along with Spirifer and Orthis. If the principles of Von Buch's arrangement of the Brachiopods are to be adopted, it will be necessary to place many of the species of his genus Terebratula in the genus Delthyris, and subdivide that genus into Strigocephalus, Pentamerus, Atrypa, Spirifer and Orthis. Calceola and Thecidea would come well before Strigocephalus; and Leptæna (in the structure and use of whose tubular spines he has been misled) will follow Orthis. So the section "Ohne Perforation" (without any perforation at the edge of the hinge) will be found unnecessary, and Terebratula and Magas will stand together; this arrangement will be found very natural.

I would propose the following distribution of the order Brachiopoda, as an improvement upon that of Von Buch.

Brachiopoda.

Animal attached to foreign bodies by the edge of the shell through the medium of a membranous tube and ligamentous fibres.	Hinge none.	Lingula.
	With a hinge. Aperture for the fibres of attachment confined to the beak of the larger valve.	Terebratula. Magas.
	With a hinge. Aperture for the fibres between the valves.	Calceola. Thecidea. Strigocephalus. Pentamerus. Atrypa. Spirifer. Orthis. Leptæna.
Animal attached by fibres penetrating the disc of one valve.	.....	Orbicula.
Animal attached by the surface of one valve directly.	.....	Crania.

ATRYPA. Section I.

Without longitudinal striæ, and with the edges of the valves upon one plane. (" Cardinal area none.")

ATRYPA pectinifera.

TAB. DCXVI.

SPEC. CHAR. Transversely obovate; surface covered with concentric ciliated fringes.

THE valves of this shell are moderately and equally convex, the larger beak is only slightly prominent, and the internal septa are obscure.

Very abundant in the magnesian limestone of Humbleton Hill, near Sunderland. It is one of the Terebratulæ spoken of by Professor Sedgwick in his paper on the magnesian limestone (Geol. Trans. New Series, Vol. III. pt. I. 119), and several other shells there mentioned as Terebratulæ have spiral appendages, and belong also to the genus Atrypa.

The three middle figures are magnified.

ATRYPA expansa.

TAB. DCXVII.—*fig.* 1.

SPEC. CHAR. Orbicular, becoming transversely oval with age, convex; front even; surface covered with broad, striated, imbricating fringes; beak small, produced, incurved.

SYN. Spirifera expansa. *Phill. Geol. Yorks. Pt. II.* 220. *Pl. X. f.* 18.

When the surface of this shell is deprived of its fringes, which it most commonly is, it appears to be concentrically striated: the even, very convex surface and pointed beak distinguish it from *At. fimbriata*, fig. 4. Abounds in the mountain limestone of Bolland; the figured specimens are in Mr. Gilbertson's Museum, except that with the fringes, which is from Ireland; it is out of a small mass of limestone, to which the fringes adhere.

A figure strongly resembling this shell accompanies a paper by M. Verneuil upon some interesting Brachiopods of the old formations (in the *Bulletin de la Société Géologique de France*, tom. xi. 259); but as he has referred it to *Terebratula* (*Atrpya*) *Roissyi*, it must be a different thing; the *T. Roissyi* has the front elevated; it is *Spirifera globularis* of Phillips.

ATRYPA planosulcata.

TAB. DCXVII.—*fig.* 2.

Spec. Char. Pentahedral, rounded, depressed, the middle of each valve longitudinally planosulcate; surface covered with broad wavy fringes.

Syn. Spirifera planosulcata. *Phill. loc. cit.* 220. *Pl. X. f.* 15.

A species well distinguished by its pentagonal form and waved fringes. The central figure represents a fragment of limestone, upon the surface of which is displayed one fringe nearly perfect, and portions of several others on the edge; it is one of the most instructive specimens that enrich Mr. Gilbertson's collection, from which the other figures were also taken. It is also found in Ireland.

ATRYPA oblonga.

TAB. DCXVII.—*fig.* 3.

Spec. Char. Oblong, very convex; edge obtuse; the middle of each valve longitudinally plan o-sulcate; (surface fimbriated ?) beak small.

We have seen but one specimen of this apparently distinct species; it is from Queen's County.

ATRYPA fimbriata.

TAB. DCXVII.—*fig.* 4.

Spec. Char. Orbicular, becoming transversely oval by age, depressed; the middle of each valve a little flattened longitudinally; surface uneven, imbricated and striated.

Syn. Spirifera fimbriata. *Phillips, loc. cit.* 220.

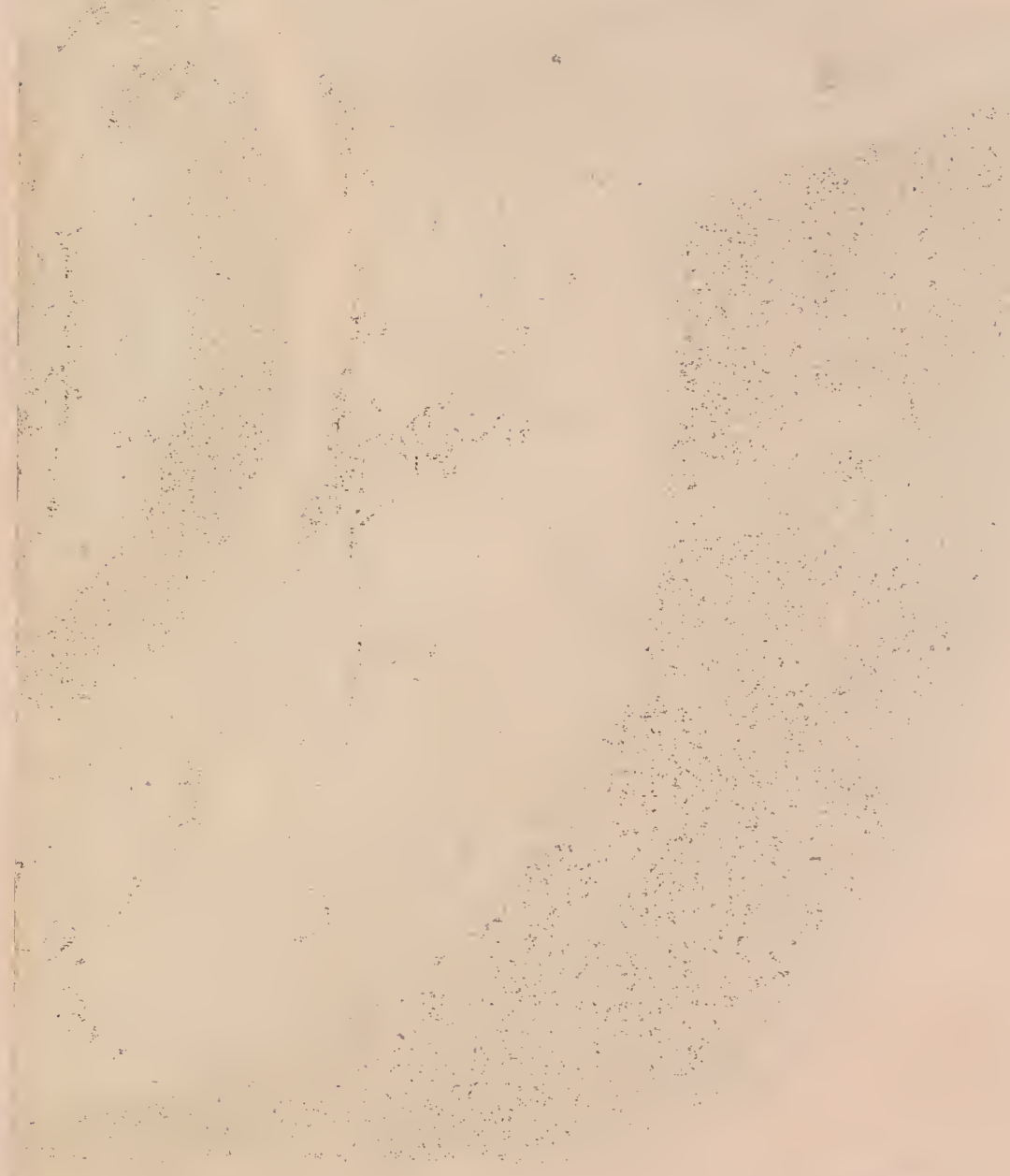
From the mountain limestone of Kendal in Westmoreland. The specimens do not well agree with the description given by Prof. Phillips of *Sp. fimbriata*; but they are considered to belong to that species by Mr. Gilbertson, in whose cabinet they are.

Cyprina planata.

March 1st 1841.

Cyprina Morrisii.

March 1st 1841.



2

4

3

1

1. Euomphalus Colei.

2.3.4. Euomphalus Pugilis.

Pseudoliva obtusa.

March 1st 1834.

1. 2. *Conus deperditus.*
3. 5. .... *diversiformis.*
6. .... *var.*

7. *Conus velatus.*
8. 9. ..... *Corculum.*

TEREDO Amphisbæna.

TAB. DCXVIII.

Spec. Char. Valves.....; tube very long, tapering, tortuose, strong, smooth, composed of short segments with concave surfaces.

Syn. Teredo articulata, *M. C. sub t.* 618. T. annularis, *Rev. G. E. Smith, MSS.* Serpula Amphisbæna, *Goldfuss, Petr.* 239. *t.* 70. *f.* 16.

This is nearly of the same diameter as *Teredo personata*, but it is much longer and more tortuose; at the smaller end it generally tapers rather rapidly, and shows but little of its articulated appearance. Our description is necessarily imperfect, for we have not been able to obtain more than the tube, the anterior portion of which is inflated (see fig. 1.).

Found imbedded in flint and chalk, with rarely any remains of the wood in which it had been formed. The largest specimen figured is from near Rochester, and is in Mr. Bowerbank's cabinet. The specimen in flint is

also from Kent, where it was collected several years ago by Lord Greenock. The chalk at Guildford and in Norfolk also produces this shell. Goldfuss has it from Maestricht and from Westphalia.

I believe the name *T. articulata* to be older than that given by Goldfuss, and have engraved it upon the plate, but as I cannot find the authority for it, it must be laid aside for the present: specimens accompanied by fossil wood show it not to be a *Serpula*, but a *Teredo*.

The name *Teredo annularis* was appended to a drawing presented to me by the Rev. Mr. Smith, of the specimen, fig. 1.

CYPRINA planata.

TAB. DCXIX.

Spec. Char. Cordiform, rather compressed; sides flattened towards the ventral margin; beaks large, not very prominent; lunette nearly flat, imperfectly defined; hinge-slope flattened, broad; between the hinge-slope and each side is a slightly depressed area; the principal tooth in the right valve narrow.

The length and breadth are nearly equal; the greatest thickness of the united valves is near the beak; the surface is smooth, excepting near the margin and upon the area on the sides of the hinge-slope, where the lines of growth form irregular furrows; the hinge-slope is so flattened, that the specimen will stand upon it as upon a base.

Several examples of this handsome large fossil have been found by Mr. Prestwich at Basingstoke, and small individuals have been discovered in the clay at Brentford and in Bracklesham Bay.

CYPRINA Morrisii.

TAB. DCXX.

Spec. Char. Transversely oval or oblong, regularly convex, rather compressed; beaks prominent; anterior slope sharp-edged, the posterior slope rounded; lunette sunk, undefined; principal hinge-tooth in the right valve broad.

Syn. Venus incrassata, *Wetherell, Foss. of the London Clay, &c, Phil. Mag. and Journ. v.* ix. 463. V. Morrisii, *ib. v.* x. 239.

A smooth thin shell of variable proportions, generally oval; the depth of the undefined lunette gives a character to its form, which when once noticed is easily recognized. It occurs in the lower beds of the London Clay, sometimes called Plastic Clay, either in sand, as at Reculvers, Herne Bay and Pegwell Bay, on the coast of Kent, and at Plumstead, Watford and Reading; or in indurated sandy marl, as at Bognor, and near the bottom of the well on Hampstead Heath.

When I made the alteration in Mr. Wetherell's list, quoted above, which Mr. Morris suggested, the hinge was still unknown, and consequently I referred the shell to the wrong genus; a number of specimens from the sandy beds and from the Hampstead Well have been since worked out, so as to enable me to correct this error.

Figs. 1—4. represent specimens from Herne Bay, some of which are in Mr. Bowerbank's cabinet; fig. 5, a variety from Pegwell Bay; fig. 6, a small variety from Boughton, near Canterbury: it is a cast in Calcedony; many such were found, and some of them contained water.

EUOMPHALUS Colei.

TAB. DCXXI.—*fig.* 1.

SPEC. CHAR. Volutions few, rapidly increasing in size, four-sided, their two outer sides largest; margin rather acute.

A LARGE shell, concave both above and below; the aperture is trapezoidal. As I have only seen a cast of the interior, I know not the characters of the outer surface; the substance appears to have been rather thick.

Found in black Limestone in Johnstone Quarry, between Finglass-bridge and Glassnevin, near Dublin, by Mr. J. Humphrey.

I have applied the family name of the Earl of Enniskillen to this noble fossil; not because I think by so doing to fix the name of Cole more firmly in the minds of geologists, where his lordship's zeal and ability have already obtained for it a most honourable standing, but because I think so rare a shell is worthy of his patronage.

EUOMPHALUS Pugilis.

TAB. DCXXI.—*fig.* 2, 3, & 4.

Spec. Char. Concave both above and below ; volutions gradually increasing, rounded, with two rows of tubercles, one above, the other below.

Syn. Euomphalus Pugilis, *Phill. Yorks.* 225.

The volutions of this *Euomphalus* are somewhat less angular than those of *E. pentagonalis*, and the upper side is generally, but not always, more concave. The tubercles beneath are sometimes very slightly prominent or irregular, when it approaches to *E. bifrons*, Phill. loc. cit. 225. t. 13. f. 4, which has tubercles on the upper side only, and is probably a variety of it ; they are both found at Bolland. The *E. Pugilis* also occurs in the county of Kildare. *E. nodosus*, M. C. tab. 46, having tubercles on the under side only, may be a third variety; the three do not differ materially in anything but the number of tubercles, which vary very much in size even on the same individual.

I am indebted to Mr. Gilbertson for the specimens figured.

PSEUDOLIVA, Swainson.

Gen. Char. Shell thick, ventricose; spire short; aperture large, longitudinal, oval, with a broad, short canal at the base and a narrow canal at the opposite extremity; outer lip with a tooth on its sharp edge corresponding to a groove around the outside of the lower part of the whorl; inner lip thick, tumid at the upper part.

A genus of shells nearly related to *Oliva* and *Eburna*, and of which the typical recent species is the *Buccinum plumbeum* of Chemnitz. Its most obvious character is the furrow upon the lower part of the whorl, terminating with a tooth on the edge of the lip, as in *Ancillaria*; a genus to which some of the fossil species approach, in having the inner lip spread over a part of the spire.

PSEUDOLIVA obtusa.

TAB. DCXXII.

Spec. Char. Obovate, smooth, with a few striæ below the furrow; spire short, small, partly concealed by the expansion of the inner lip;

the canal or beak slightly projecting; furrow below the middle of the whorl.

Syn. Buccinum obtusum, *Deshayes, Foss. de Paris*, *v.* ii. 657. *t.* 88. *f.* 1, 2.

From the recent *Pseudoliva plumbea* this shell differs in being shorter; in having the tooth and furrow corresponding with it much higher up the whorl; in the projecting beak, which produces a flattened band around the base, not a furrow, which is made part of the generic character by Swainson. The expansion of the inner lip partly over the spire is also a remarkable character, which makes it almost as distinct from the recent *Pseudoliva* as *Ancillaria* is from *Oliva*. The surface of the last whorl is spirally but very faintly, striated above the furrow, and has eight or ten strongly-marked lines below it. I have not seen a specimen of *P. obtusa* from Chaumont, therefore it is possible I may not be correct in referring the English species to it, but it agrees well with Deshayes' description.

For the discovery of this curious and rare fossil we are indebted to the researches of Mr. Bowerbank and Mr. Edwards upon the beach at Bracklesham Bay; it has also been obtained by Mr. Lowry from Hook Common, near Basingstoke. The specimens from the former place are commonly much flattened by pressure.

CONUS deperditus.

TAB. DCXXIII.—*fig.* 1 & 2.

SPEC. CHAR. Doubly conical; spire as high as it is wide, acute; upper parts of the whorls narrow, concave, concentrically striated, the angles of the inner ones crenated; the last whorl longer than the spire, with nearly straight sides, striated about the beak; aperture narrow.

SYN. Conus deperditus, *Brug. Enc. Méth. Vers*, i. 691. *pl.* 337. f. 7. *Lam. Ann. du Mus.* xv. 441; *Lam. Hist. Nat.* vii. 528. *Desh. Coq. Foss.* ii. 745. *pl.* 98. *f.* 1, 2. *Morris, Catalogue of British Fossils*, 143.

THERE are about four striæ upon the concave space above the angle of each whorl; the sides of the whorls are slightly convex. On some specimens there are still visible many narrow bands of colour with equal white spaces between them. The length of the spire is variable, and thus this shell approaches to the next species.

CONUS diversiformis.

TAB. DCXXIII.—*fig.* 3—6.

Spec. Char. Doubly conical; spire half as high as it is wide, acute; upper portions of the whorls narrow, concave, and concentrically striated; last whorl much longer than the spire, with straight sides, striated about the beak; aperture narrow.

Syn. Conus diversiformis, *Desh. Coq. Foss.* ii. 746. *pl.* 98. *f.* 9–12. *Morris, Cat. Brit. Foss.* 143.

Var. β. Inner whorls crenated on their angles (fig. 6.); fig. 3 shows indications of similar crenatures.

The striæ about the beak of this Cone sometimes extend half way up the last whorl. It is difficult to fix upon characters to distinguish this from *C. deperditus*; the short spire, which however is variable, and the straighter sides of the last whorl are relied upon: the extended lip is the same in both species. The specimens found at Parnes and Mouchy are said by M. Deshayes to have no crenatures upon the spire, whereas most of the English specimens have a few near the apex.

CONUS velatus.

TAB. DCXXIII.—*fig.* 7.

Spec. Char. Doubly conical; spire wider than it is high; whorls concave and granulated above their angles, which are even; the last whorl much longer than the spire, straight-sided, with obscure striæ towards the beak; lines of growth conspicuous.

Syn. Conus velatus, *Sow. Morris, Cat. Brit. Foss.* 143.

The granulations on the spire are produced by decussating striæ; and these, with the conspicuous lines of growth, give the shell the appearance of having been enclosed in a net or net-veil, whence the name: the surface of the lower part of the last whorl is rather concave; in other respects it resembles *Conus diversiformis*.

CONUS Corculum.

TAB. DCXXIII.—*fig.* 8 & 9.

Spec. Char. Doubly conical, transversely striated; spire one-third the length of the shell, longer

than wide; the angles of the whorls obtuse, waved, the upper edges finely crenated; striæ sharp, elevated; aperture narrow.

Syn. Conus Corculum, *Sow.* *Morris, Cat. Brit. Foss.* 142.

A beautiful and rare shell: it much resembles *C. concinnus* (M. C. 302), but it has a shorter spire, finer striæ, and less ornament.

These four species of *Conus* are all from Bracklesham Bay, on the coast of Sussex, where they were collected by Mr. Bowerbank. The *Corculum* and *velatus* are very rare, only one specimen of each is known. The other two are among the many instances of species occurring at Bracklesham which are perfectly identical with those of the Paris Basin; while nearly all the shells of the clay of London and Barton, although similar, are distinguishable from the French ones. The discovery of this fact has rewarded the incessant labours of Messrs. Bowerbank and Edwards, whose assistance I beg to acknowledge with gratitude.

PHANEROTINUS.

Gen. Char. Shell a convoluted tube, discoid; whorls several, not touching each other, arranged nearly in a plane; aperture roundish; substance thick, composed of several coats.

The shells of this genus are composed of a thick tube which is wound about a transverse (in this case an imaginary) axis, as it is in *Ammonites*: but the whorls expose their whole surfaces. The general form is discoid; and the two sides of the disc being nearly alike, although not precisely so, I consider the tube as convoluted, and that it may possibly not belong to the same order of mollusks as *Euomphalus*, to which genus the leading species, *P. cristatus*, has been referred by Prof. Phillips. In the genus *Ecculiomphalus* of Captain Portlock (Geol. Report on Londonderry, p. 411) the shell is much less curved, and very thin; its general aspect also is so different, that although it may not be easy to frame a satisfactory generic character, I am unwilling to believe it can include the fossils now under consideration.

PHANEROTINUS cristatus.

TAB. DCXXIV.—*fig.* 1 & 2.

Spec. Char. Margin decorated with triangular foliaceous appendages.

Syn. Euomphalus cristatus, *Phillips, Geol. York.* ii. *t.* 13. *f.* 5. *Morris, Cat. Brit. Foss.* 144 & 155.

Volutions 4 or 5, the latter ones expanding rather more rapidly than those nearer the centre; one side more con-

vex than the other, and the margin a little flattened. The foliaceous appendages are large, broad at the base and recurved towards their points: they are so numerous as to touch or even cross one another, and are probably placed in two rows. The aperture is oblique with rounded edges, ovate, biangular, the angles being at the extremities of the longest diameter, which is terminated by the foliaceous expansions. The lines of growth are numerous, arched and sharp, indicative of an internal animal. The smaller part of the tube is usually separated by a septum as the animal advances.

I have seen three specimens of this extraordinary shell, two of which, found in the limestone of Kendal, were only portions of the last whorl, which measured 9 inches by 6; the termination of one of these is shown at fig. 2. The third specimen is the same as that figured by Prof. Phillips; it is from near Whittle in Yorkshire. I am indebted to Mr. Gilbertson of Preston for the use of all these specimens: the last has been transferred by that gentleman, along with his splendid collection of mountain-limestone fossils, to the British Museum.

PHANEROTINUS nudus.

TAB. DCXXIV.—*fig.* 3, 4 & 5.

Spec. Char. Unarmed.

Syn. Phanerotinus nudus, *J. Sow.* *Morris, Cat.* 155.

A simple, nearly round, convoluted tube, with a slight ridge along one side; lines of growth strong, circular; thickness unequal.

This occurs in mountain limestone with *Euomphalus pentangularis*, &c. The specimens are in Mr. Gilbertson's collection.

VOLUTA Cithara.

TAB. DCXXV.—*fig.* 1, 2 & 3.

SPEC. CHAR. Ovate-oblong, ventricose, ribbed; base contracted, furrowed; ribs distant, with two or three small spines on their upper parts; spire short, acuminate, furnished with small spines; whorls rounded above.

SYN. Voluta Cithara, *Lam. Hist. Nat.* vii. 348. *Desh. Enc. Méth. Vers,* iii. 1143; *Desh. Coq. Foss.* ii. 682. *pl.* 90. f. 11, 12. *Morris, Cat.* 167.

Voluta harpa, *Lam. Ann. du Mus.* i. 476, and xvii. 74.

So perfectly does this agree with some French individuals of this species, that there can be no hesitation in referring it to the same type: the three rows of small spines upon the rounded upper parts of all the whorls but the last distinguish it from every other Volute; on the last whorl one row of spines is often nearly obliterated. The English specimens have a short spire; in some French ones the spire is considerably produced.

Found at Bracklesham Bay. The figures are from specimens in the collections of Mr. Bowerbank and Mr. Edwards.

The localities given by Deshayes are Grignon, Courtagnon and Parnes.

VOLUTA scalaris.

TAB. DCXXV.—*fig.* 4 & 5.

SPEC. CHAR. Ovate, ventricose, costated and transversely striated; costæ numerous, with two nearly equal small spines on the upper part of each; striæ distant, equal; spire shorter than wide, acute; base attenuated; whorls with a narrow flat space between the upper row of spines and the suture, and concave between the two rows of spines.

A SMALLER, more inflated and more regularly shaped shell than *V. spinosa*: the narrow costæ, numerous, nearly equal spines, and regular, sharp striæ, which continue almost up to the lowest spine, give it an aspect by which it may easily be recognized. It occurs plentifully at Barton, but seldom exceeds an inch and a quarter in length. The variety β of *V. spinosa*, t. 115, approaches to it, but is less rather than more inflated, and has a portion of the last whorl smooth.

VOLUTA depauperata.

TAB. DCXXV.—*fig.* 6, & 396. *fig.* 4.

THIS figure of a rare species is given to show the young state, and the coloured stripes which are constantly observable, but were obscure and therefore omitted in the specimen formerly figured. Of five individuals I have seen, the largest is an inch and three quarters long.

VOLUTA muricina.

TAB. DCXXVI.—*fig.* 4, 5 & 6.

Spec. Char. Ovate-fusiform, with a rather produced base; the lower part even, the upper tuberculato-costated; the last whorl longer than the spire, rather convex.

Syn. Voluta muricina, *Lam. Ann. du Mus.* i. 477. & xvii. 75; *Lam. Hist. Nat.* vii. 350. *Desh. Coq. Foss.* ii. 697. *pl.* 91. *f.* 18, 19. *pl.* 93. *f.* 3, 4. & *pl.* 94. *f.* 3, 4. *Morris, Cat.* 168.

So variable is this shell, that it is almost impossible to define it. The costæ are often elongated and rounded, with a protuberance at their upper terminations (fig. 5 and 6). This is particularly the case with those upon the spire; at other times they are very short, and assume the form of angular tubercles (fig. 4): the length of the shell also varies with the form of the costæ: when perfect the surface is finely striated transversely. Fig. 5 represents a variety approaching to the following species.

The French localities are Grignon, Parnes, Mouchy and Courtagnon. The fine striæ on the surface appear to have escaped Deshayes' observation.

VOLUTA angusta.

TAB. DCXXVI.—*fig.* 1, 2 & 3.

Spec. Char. Subfusiform, elongated, narrow, costated, transversely striated; whorls rather convex; the last whorl as long as the spire, tuberculato-costated; aperture narrow; striæ extremely fine and numerous.

Syn. Voluta angusta, *Desh. l. c.* ii. 697. *pl.* 94. *f.* 5, 6. *Morris, Cat. Brit. Foss.* 167.

I find nothing to distinguish this shell from *V. muricina* excepting its greater length; in fact the specimens figured form a complete series from one species into the other. Deshayes has anticipated this circumstance; but as the English fossils do not show the plaits on the columella, which afford him a distinguishing mark among the French ones, I have not ventured to unite the species. They both are found rather rarely at Bracklesham Bay.

The specimens given in the plate, figs. 2, 4 and 6, are in Mr. Edwards's collection, figs. 1 and 3 in that of Mr. Bowerbank. Deshayes obtained his *V. angusta* from Retheuil, Guise, Lamothe and Soissons.

NAUTILUS Sowerbyi.

TAB. DCXXVII.—*fig.* 1, 2 & 3.

SPEC. CHAR. Lenticular, with a rounded edge, umbilicated; septa very convex, their ends much recurved and obliquely truncated; siphuncle very near the inner edge of the septum; aperture triangular, longer than wide; lines of growth suddenly bent very far backwards.

SYN. Nautilus Sowerbyi, *Wetherell in Phil. Mag. and Journ. v.* ix. 466. *Morris, Cat.* 183.

ONE of the discoveries made by Mr. Wetherell in the cutting at Chalk Farm for the Birmingham railroad, in the middle part of the London Clay. It also occurs at Bognor, as I learn from Mr. Dixon of Worthing, and I have seen it from Sheppy. It is a well-marked species, which grows to nine inches in diameter.

Figs. 4, 5 and 6 are added to this plate to show the position of the siphuncle and form of the septum in each of three other species of *Nautilus*. Fig. 4 is *N. imperialis* (tab. 1), which has a somewhat triangular septum, wider than long, with broad obliquely truncated sides which are suddenly reflected, and a siphuncle that recedes from the inner margin as the shell increases in size. Fig. 5,* *N. regalis* (t. 355): the septum rather square, no part of it reflected, and the siphuncle nearly central. Fig. 6,*

* In some copies these numbers are accidentally reversed.

N. centralis (tab. 1), with a semicircular septum, much wider than long, regularly convex, without any second curvature, and a nearly central siphuncle. These characters will be found of importance when imperfect specimens are to be examined, as some one or other of them is generally to be ascertained.

NAUTILUS urbanus.

TAB. DCXXVIII.

SPEC. CHAR. Discoid, thick, convex, with a rounded margin, umbilicated; sides undulated when old; septum oblong, regularly convex, anteriorly narrowed, posteriorly (interiorly) truncated, not recurved; siphuncle nearest the inner edge; lines of growth not remarkably recurved.

SYN. N. urbanus, *Sow. Morris, Cat.* 183.

A FLATTER shell than any other tertiary species of *Nautilus* except *N. ziczac.* In common with *N. centralis* and *N. regalis*, its surface is in the young state concentrically striated and the lines of growth beautifully decussated. I have long had this in my possession; it was found in digging for the St. Katharine's Docks near the Tower of London. The smaller individual is from Sheppy, and is in Mr. Bowerbank's collection; it has also been found at Highgate.

PHOLADOMYA hesterna.

TAB. DCXXIX.

Spec. Char. Elliptical, transverse, gibbose, slightly curved, obscurely ribbed ; ribs about 12, composed of small tubercles ; beaks near the small anterior extremity.

Syn. Pholadomya candidoides, *S. V. Wood, Ann. and Mag. Nat. Hist. v.* 6. 245.

Strongly resembling the recent *P. candida*, but the posterior extremity is more rounded and the ribs smaller. Some specimens are so much longer in proportion to their width, and so distorted by fracture, that it is difficult to distinguish them from *P. Dixoni* ; the short and more curved anterior margin may assist in such cases. (See the lower figure.) The specimens are in Mr. Wood's matchless collection, and are from Ramsholt near Woodbridge. I have ventured to alter the name with Mr. Wood's consent, *candidoides* being only provisional and not regularly formed.

PHOLADOMYA virgulosa.

TAB. DCXXX.—*fig.* 1.

Spec. Char. Transversely elongated, convex, ribbed; ribs numerous (about 24), rounded, thin, crossed by many irregular waves, obscure on the anterior and wanting on the posterior slope; beaks near the anterior extremity, which is truncate; section ovato-cuneiform.

At least one-fourth wider than long, with the sides a little flattened; the ribs above 24, thin, and divided into small tubercles by the concentric undulations. This shell has long been known as found in the Bognor rocks, but I am not aware that it has been discovered elsewhere. The name has been given it by a society of gentlemen who meet to study tertiary fossils. It is a very distinct species; the specimen figured is in Mr. Dixon's cabinet.

PHOLADOMYA Dixoni.

TAB. DCXXX.—*fig.* 2.

Spec. Char. Transversely oblong, gibbose, ribbed along the middle, concentrically waved; ribs few (about 12), slender; beaks large, placed near the truncated but not gaping an-

terior extremity, which is separated by a ridge from the middle; posterior extremity produced, rounded, gaping; section obovate.

Shell very gibbose, wider than long, with prominent beaks, and the anterior portion almost flat and without ribs. Hitherto found only at Bognor: Mr. Dixon has several specimens in his cabinet besides the one figured.

PHOLADOMYA margaritacea.

TAB. DCXXX.—*fig.* 3.

Spec. Char. Subquadrate, very convex, ribbed; ribs small, few (about 12), extending over the small anterior portion of the surface, which is separated by an angle from the middle; beaks produced, pointed, placed near the anterior, almost straight, truncated extremity; section elliptical.

Syn. Cardita margaritacea, *M. C. t.* 175. *fig.* 2 & 3.
Pholadomya margaritacea, *M. C. General Index.*
Morris, Cat. 98.

Two new species of *Pholadomya* having been found in the London Clay, it has become necessary to describe the *P. margaritacea* with more precision; and thus we have been

led to the discovery of a fourth species, the subject of the next description. *P. margaritacea* is to be known from both the preceding species by its length and square form; it is often so crushed as to resemble *Cardium Cardissa* in shape, when the beaks become remarkably pointed. It was found abundantly in the lower part of the London Clay at Chalk Farm, while the excavation for the Birmingham railroad was proceeding: it is also common on the Isle of Wight, whence the remarkably perfect specimen, figured on the present plate, was obtained for me by Professor Morton. It also occurs at Brentford and at Bognor, and was found in a well at Richmond, as formerly stated.

PHOLADOMYA? cuneata.

TAB. DCXXX.—*fig.* 4.

SPEC. CHAR. Trigonal, concentrically striated, posteriorly wedge-shaped; the anterior side cordiform, nearly flat, obscurely ribbed, its margin raised and reflected over the beaks; length and breadth about equal.

SYN. Cardita margaritacea, *M. C.* 297. *f.* 1.
Pholadomya cuneata, *Morris, Cat.* 97.

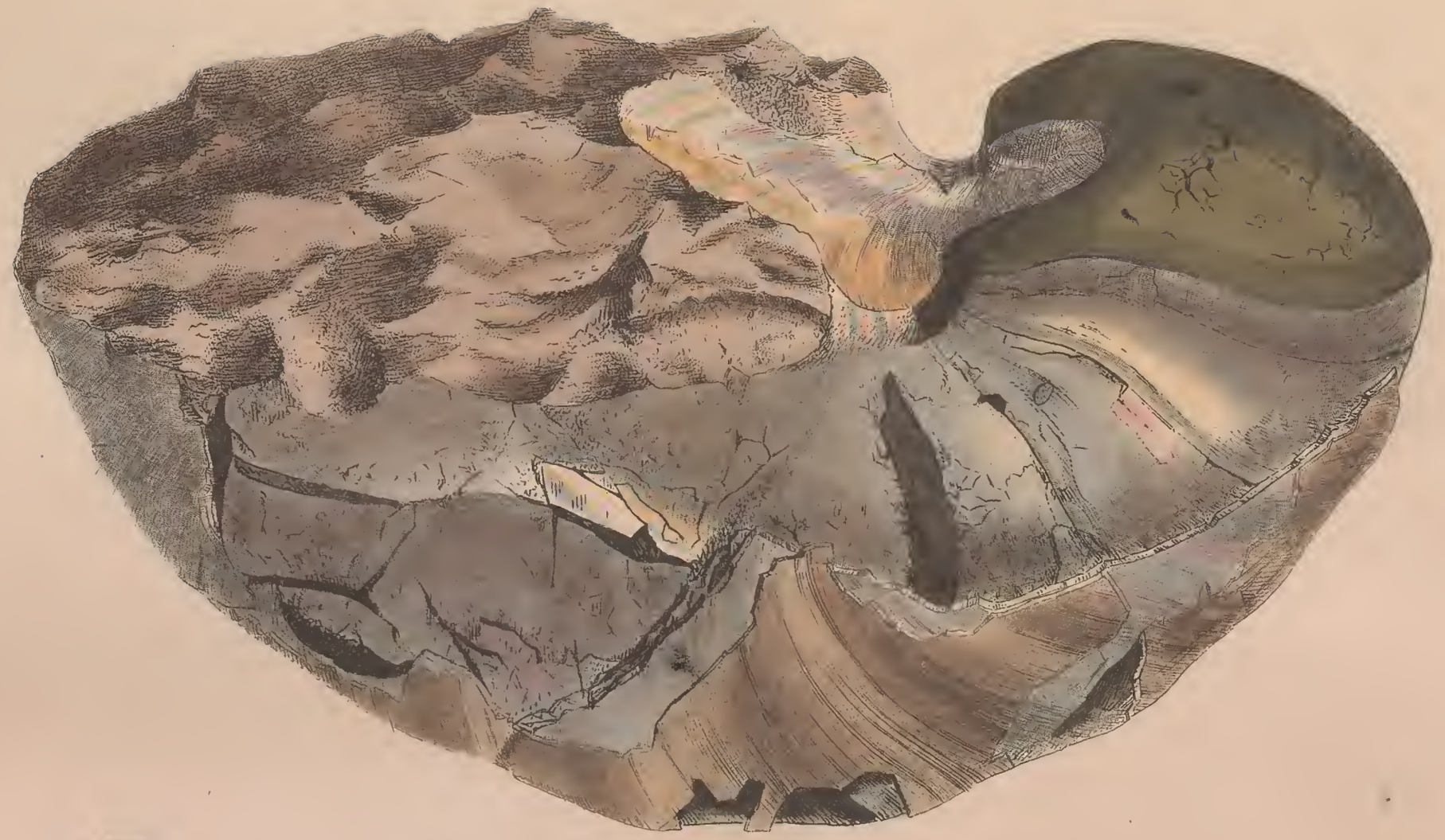
A SMALL species approaching very nearly to the genus *Pholas*, having thin sharp lines upon its surface, with the anterior side extremely short, and gaping when young; the peculiar elevation of the anterior portion of the hinge line, which is reflected over the beaks, also favours the resemblance to *Pholas*; the pallial impression is remarkably strong and rough. Found only at Pegwell Bay near Ramsgate (called Bogwell Bay in the description of plate 297). This shell was formerly confounded with *P. margaritacea*, but the discovery of more perfect specimens, with the anterior margin reflected between and over the beaks, has proved it to be quite a different thing.

182. Phanerotinus. cristatus.
Sto5. ..... nudus.

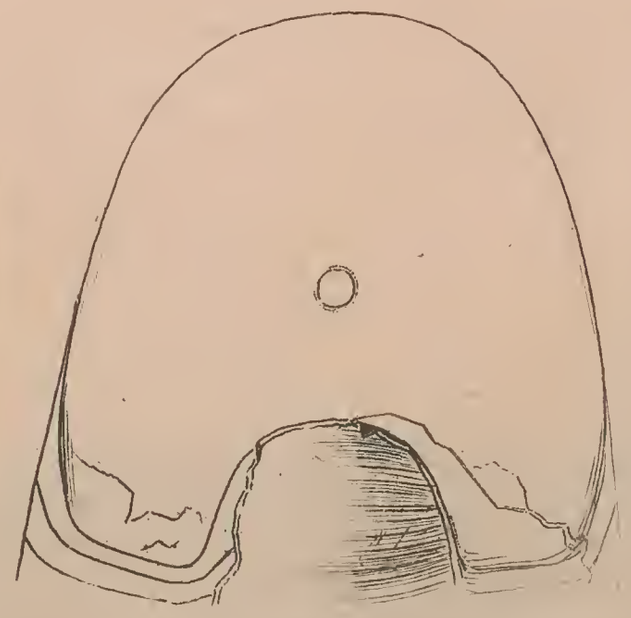
1 2 3. Voluta Cithara.
1 & 5 ..... scalaris.
6 ..... depauperata.

1 to 3. *Voluta angusta.*
4 to 6. *V. ..... muricina.*

1 to 3. Nautilus Sowerbyi
4 ..... imperialis.
5 ..... regalis.
6 ..... centralis.

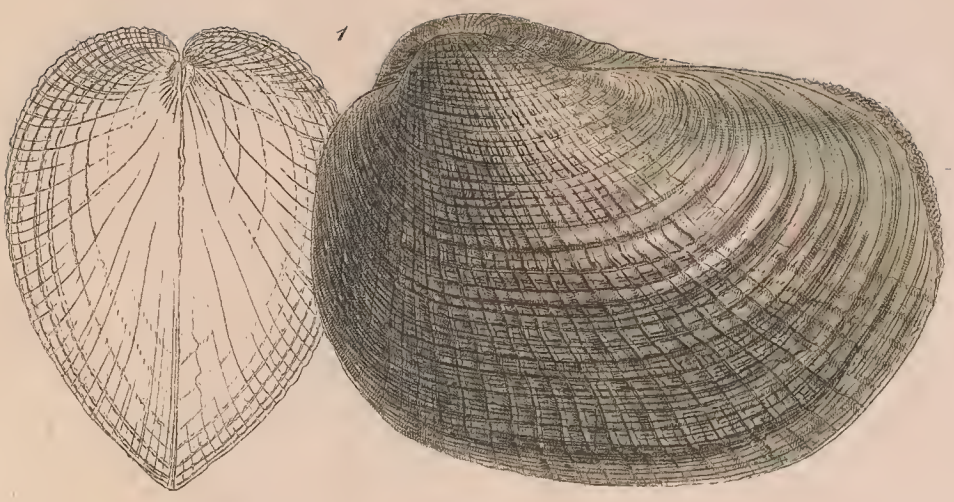


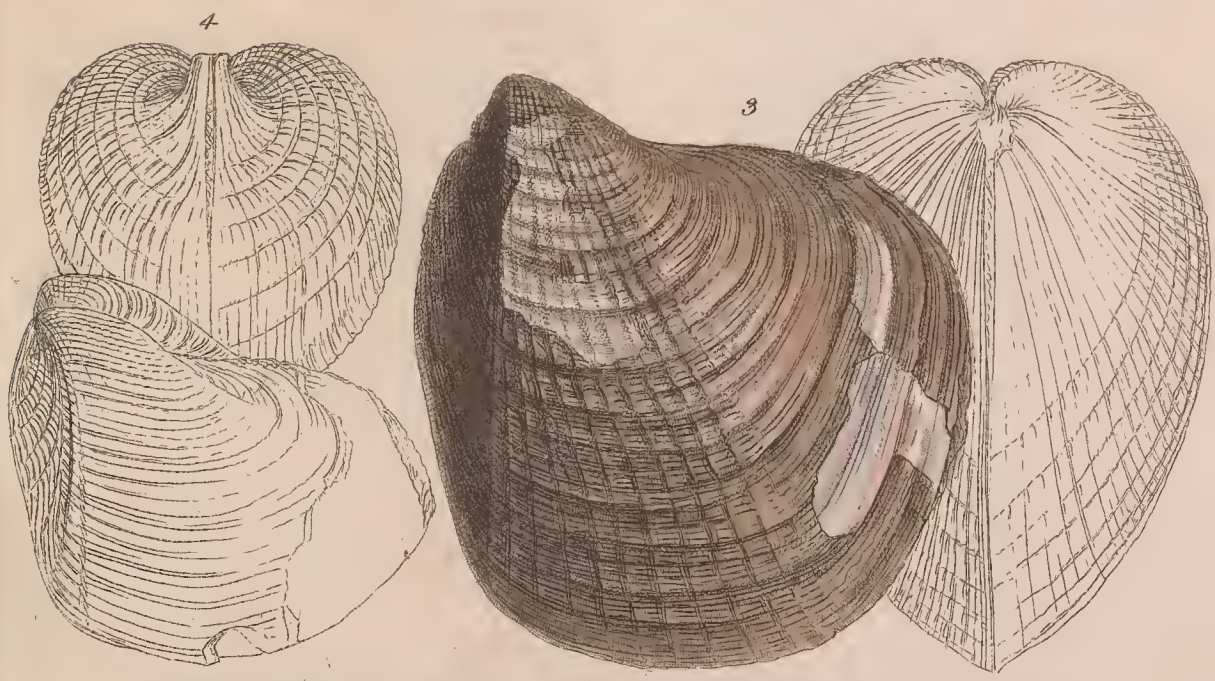
Nautilus urbanus.



Pholadomya hesterna.

Jan.y 7th 1844



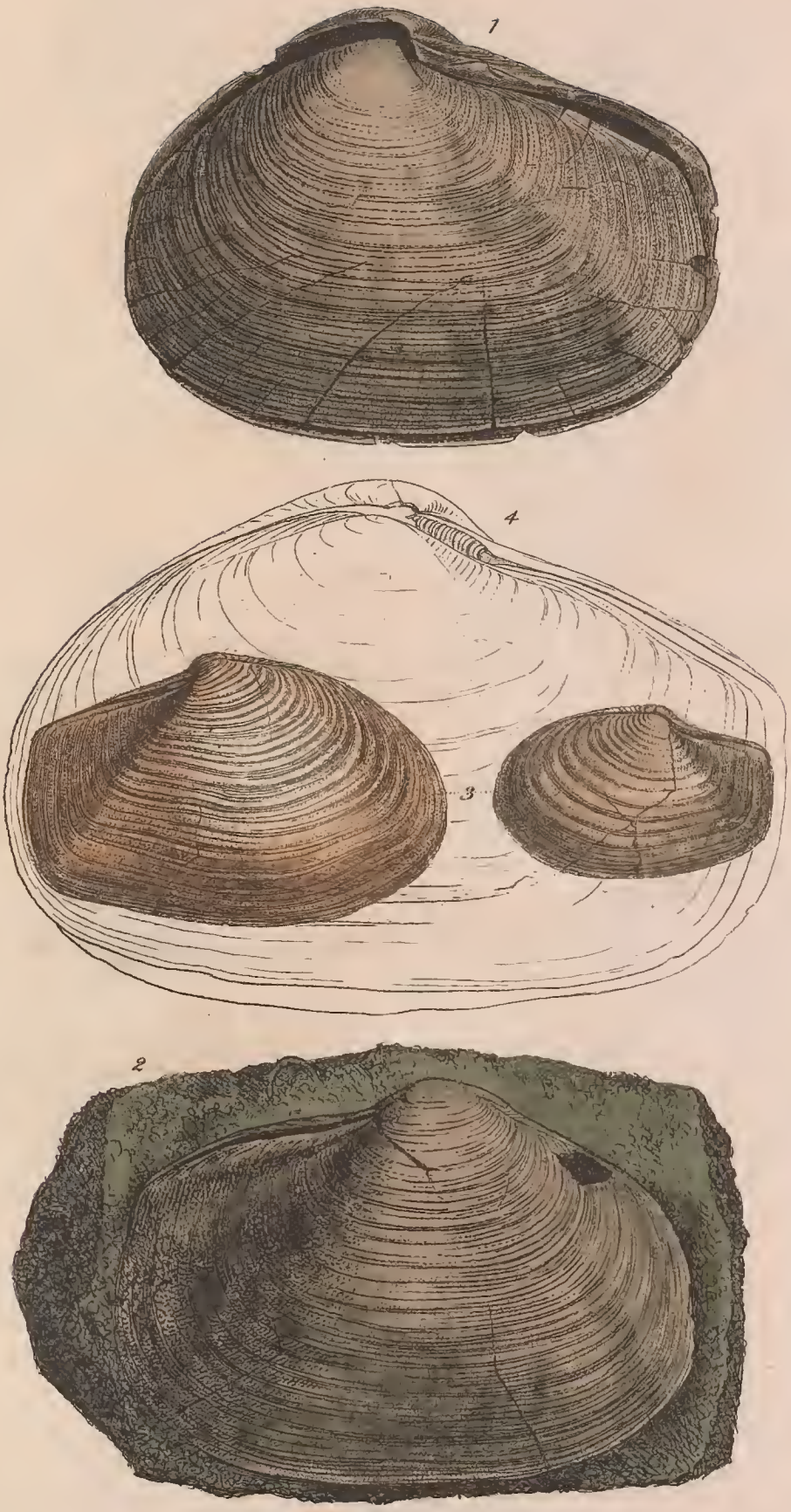


1. Pholadomya virgulosa. 2. P. Dixoni. 3. P. margaritacea. 4. P. cuneata.

Jan.1st 1844.

1. *Thracia pubescens*
2.3.4. ..... *inflata*.

Jan.1st 1844.



1.2. *Thracia oblata*.
3 ..... *sulcata*.
4 ..... *pubescens*, recent.

Jan 1st 1844.

Fig. 1. Euomphalus clausus.
2. ..... Pugilis var: bifrons.
3. ..... depressus.
Fig. 4 to 7. Euomphalus carbonarius.
8–10. ..... Calyx.

THRACIA, Leach.

GEN. CHAR. Valves unequal, more or less gaping posteriorly; hinge without teeth, its ligament attached to a sunken narrow fulcrum, its cartilage internal, bifid, seated between two thick equal processes or calli, one in each valve; sinus in the attachment of the mantle short.

A GENUS very properly separated by Dr. Leach from *Mya* of Linnæus and other authors. The equality of the processes for the support of the hinge cartilage in the two valves being a very strong character; near the beak there is a protuberance which may be considered as a rudimentary tooth, and above this protuberance the old shell is usually eroded. It has the strong epidermis of the *Myaria* and an opaque not pearly substance.

The recent species inhabit muddy or sandy shores in temperate climates: a few only are known, and the fossil ones are scarcely more numerous; they occur in the tertiary and newer formations.

THRACIA pubescens.

TAB. DCXXXI.—*fig.* 1.

SPEC. CHAR. Transversely elongated, ovate, convex; surface granular beneath the epidermis; posterior extremity truncated, the truncation inclined towards the nearly straight ventral

margin; beaks central; hinge callus large, triangular.

Syn. (Fossil). Thracia pubescens, *S. V. Wood in Annals and Mag. Nat. Hist. v.* 6.245. *Morris, Cat.* 102.

(Recent) tab. DCXXXII. f. 4. Mya declivis, *Pennant, Brit. Zool.* iv. no. 15. *Maton and Racket in Trans. Linn. Soc. v.* viii. 36. *Wood, Gen. Conch.* 93. *t.* 18. *f.* 2 & 3.

Mya pubescens, *Pulteney in Hutchins's Dorset.* 27. *t.* 4. *f.* 6. *Montague, Test. Brit.* 40. *Turton, Conch. Dict.* 99. *Brit. Bivalves*, 45. *pl.* 4. *f.* 3.

Thracia pubescens, *Lam. Hist. Nat. 2nd ed. vol.* 6. 83.

In all the essential characters this crag fossil agrees with the recent shell of the western coast of England; if there be any difference the crag one is smoother and more truly oval, the ventral margin being more curved.

Both the coralline at Ramsholt and the red crag at Sutton furnish this fragile shell; it is also among the fossil shells of Sicily (Lamarck Hist. Nat. *supra*), and I have a young individual very closely resembling it.

Some doubts having been formerly entertained of the identity of Pennant's shell, which occurs in the Hebrides, with the Dorsetshire species, the name of the latter has been adopted, although *declivis* is the older, and ought in truth to be retained in preference.

THRACIA oblata.

TAB. DCXXXII.—*fig.* 1 & 2, and TAB. DXXXIV. *fig.* 3. (Lutraria oblata.)

Spec. Char. Transversely elongated, oval, convex, surface granular; posterior extremity truncated, truncation longitudinal, a little curved; ventral margin nearly straight, beaks nearest the anterior extremity; hinge callus lanceolate.

Syn. Thracia oblata, *Morris, Cat.* 102.

So nearly does this resemble the last that it was not until the hinge was observed that there were good grounds for considering it more than a variety. An outline of the recent species is given at fig. 4 for comparison, the hinge is seen on the preceding plate.

An abundant shell at Bracklesham Bay, Sussex; it is also found in the cliffs at Pegwell Bay and Herne Bay in Kent. The imperfect cast figured at tab. 534. f. 3. was found at Bognor, where it is supposed to be rare. The rich mine at Bracklesham, opened by Mr. Bowerbank, has enabled us to become better acquainted with a shell so interesting from its near resemblance to a recent one that also occurs in the crag.

THRACIA inflata.

TAB. DCXXXI.—*fig.* 2, 3 & 4.

Spec. Char. Ovate, suborbicular, inflated; posterior extremity produced, truncated, with a

longitudinal low ridge extending from the central beaks ; ventral margin arched.

Syn. Thracia convexa, *S. V. Wood, Annals, &c. v.* 6. 245. (non auctorum.)

Thracia convexa, a recent species, is a convex nearly heart-shaped shell, with a straight ventral margin, and beaks nearest the posterior extremity; but still so much is the shell before us like it, that imperfect specimens may easily be mistaken for the same; and Mr. Wood observes in the 'Annals,' that his "specimens are compressed and broken; too imperfect for identification." Specimens since collected at Sudburn Hall and Ramsholt by the Rev. R. Wilson and Mr. S. V. Wood have enabled us to determine the difference and to give nearly complete figures. A species more nearly allied to *T. convexa* is found in the newest tertiary beds of Sicily.

THRACIA sulcata.

TAB. DCXXXII.—*fig.* 3.

Spec. Char. Transversely elongated, oval, largely truncated, compressed, concentrically furrowed; truncated extremity separated by an obtuse ridge; beaks rather nearest to the posterior extremity, hinge callus lanceolate.

The surface of this is composed of granules, like several others of the same genus; it is otherwise so distinctly marked that it is easy to recognise it. The specimens figured are in the cabinet of F. E. Edwards, Esq., who discovered them at Bracklesham.

EUOMPHALUS clausus.

TAB. DCXXXIII.—*fig.* 1.

SPEC. CHAR. Discoid, thick, with conspicuous lines of growth; whorls few, angular above, rounded beneath, margin obtusely angular; umbilicus small, closed over the inner whorls; aperture higher than wide.

SYN. Cirrus pileopsideus, *Phill. Geol. Yorks. pt. 2. 226. pl. 13. f. 6. Morris, Cat.* 142.

A THICK shell with a perfectly depressed spire, hence not a *Cirrus*; the angle on the upper part of the whorl being close to its inner margin, and the umbilicus too small to show the inner whorls, distinguish it from *E. pentangulatus*.

The only specimen known of this shell was many years ago named *E. clausus* in Mr. Gilbertson's collection, which is now in the British Museum; and as it is not a *Cirrus* I have thought it best to retain that name.

EUOMPHALUS depressus.

TAB. DCXXXIII.—*fig.* 3.

SPEC. CHAR. Discoid, depressed, smooth; whorls few, angular above, rounded beneath, equally visible on both sides; aperture wider than high.

A MUCH flatter shell than *E. pentangulatus*, which it much resembles; it has also fewer whorls. From Mr. Gilbertson's collection.

Euomphalus serpens (Phillips' Devon and Cornwall, 94) wants the angle on the upper surface and is more concave beneath.

EUOMPHALUS carbonarius.

TAB. DCXXXIII.—*fig.* 4 *to* 7.

SPEC. CHAR. Discoid, depressed, smooth; whorls few, subtrigonal, bicarinated; keels distinct, large, rounded, forming the boundaries of the upper and under surfaces, the lower one widest in diameter; margin convex; aperture orbicular.

A SMALL species with strongly marked characters: it is smooth, equally concave on both sides, the lower surface being considerably the largest; the two keels bound the margin, from which they are separated by shallow furrows produced by the convexity of the surface between them; the aperture is orbicular because the keels are formed entirely in the thickness of the shell.

I am indebted for this interesting fossil to Dr. Rankin of Carluke and Mr. Purdue; the following note, obligingly

furnished to me by Mr. Morris, contains the necessary information respecting its geological position. "*E. carbonarius*, which is very common in the shales near Glasgow and also frequently found in the lower limestone shale at Denwick Lane near Alnwick, at North Sunderland, and Buddle Bay in Northumberland. At the latter locality it is associated with *Chonetes sarcinulata* (*Leptæna lata*, Sil. Syst.) and *Possidonomya tuberculata* (*Possidonia*, Geol. Trans. 2nd ser. v. 5.), the shales being considerably altered by their proximity to a trap dyke. This species appears to be a characteristic shell of the lower carboniferous shales, for I believe it has not hitherto been found in any of the upper members of the carboniferous system."

EUOMPHALUS Calyx.

TAB. DCXXXIII.—*fig.* 8, 9 & 10.

Spec. Char. Discoid, thick, very concave beneath; margin broad, inclined upwards, bounded by two carinæ; aperture triangular, its upper edge shortest.

Syn. Euomphalus Calyx, *Phill. Yorks. pt.* 2. 225. *pl.* 13. *f.* 3. *Morris, Cat.* 144.

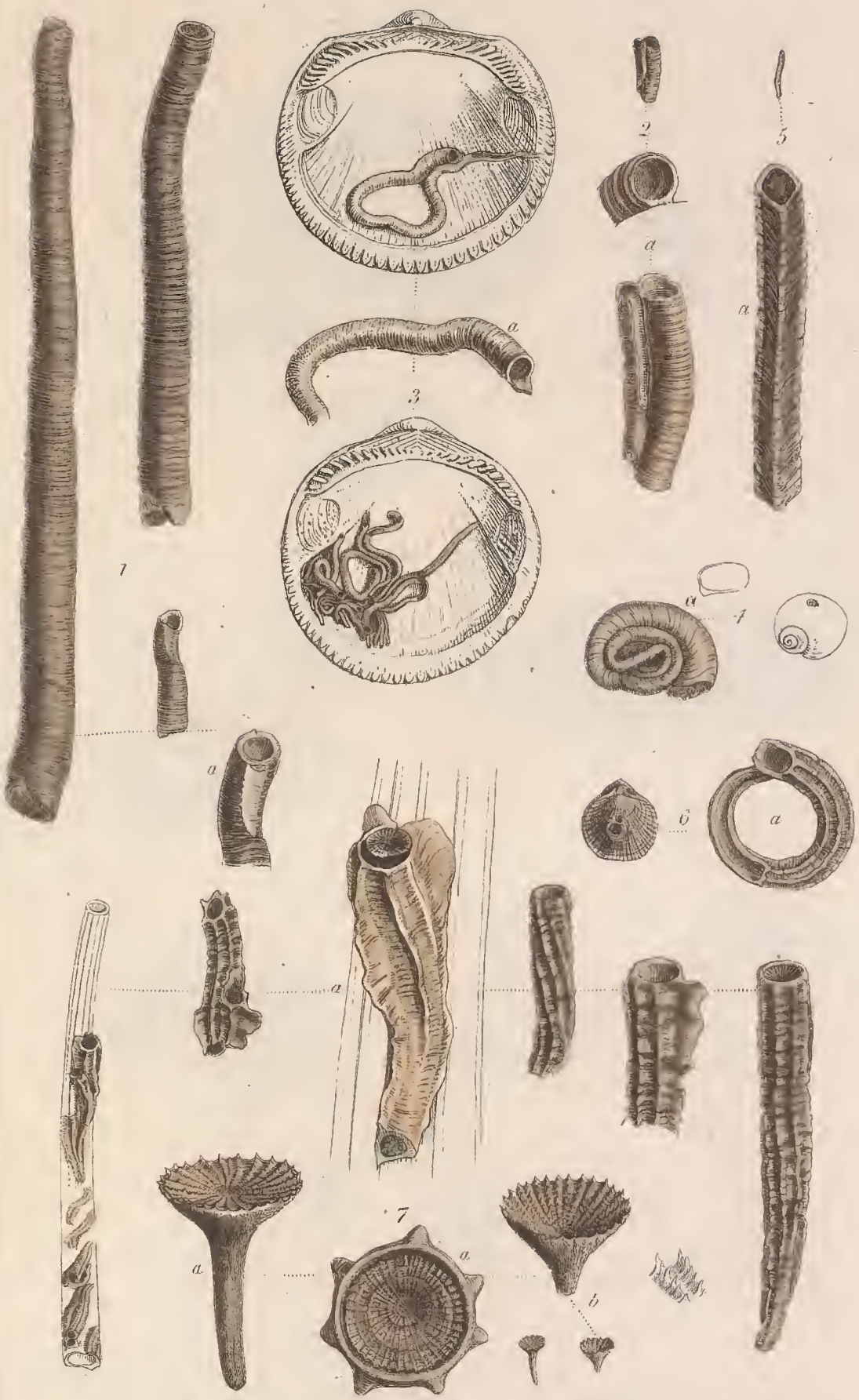
This differs from *Euomphalus Catillus* in the much greater height of the whorls and their inclined sides, which give it the form of a deeply truncated cone or an inverted cup. It is a rather a rare shell in the carboniferous limestone of Bolland, and also in that of Kildare in Ireland, where it acquires a considerable size.

EUOMPHALUS Pugilis var. bifrons.

TAB. DCXXXIII.—*fig.* 2.

Syn. Euomphalus bifrons, *Phill. Yorks. pt. 2. 225. pl. 13. f. 4. Morris. Cat.* 144.

Having examined several individuals of this and the *E. pugilis* (t. 621.), in which the tubercles of the underside are various in elevation, I have come to the conclusion that they are only varieties of one species. The specimen figured is in Mr. Gilbertson's collection in the British Museum.



1. *Serpula extensa.*
2. . . } *flagelliformis.*
3. . . }
4. . . *exigua.*
5. *Serpula prismatica.*
6. . . *bilineata.*
7. . . *hexagona.*
a. b. mag.

Mar. 1. 1844.

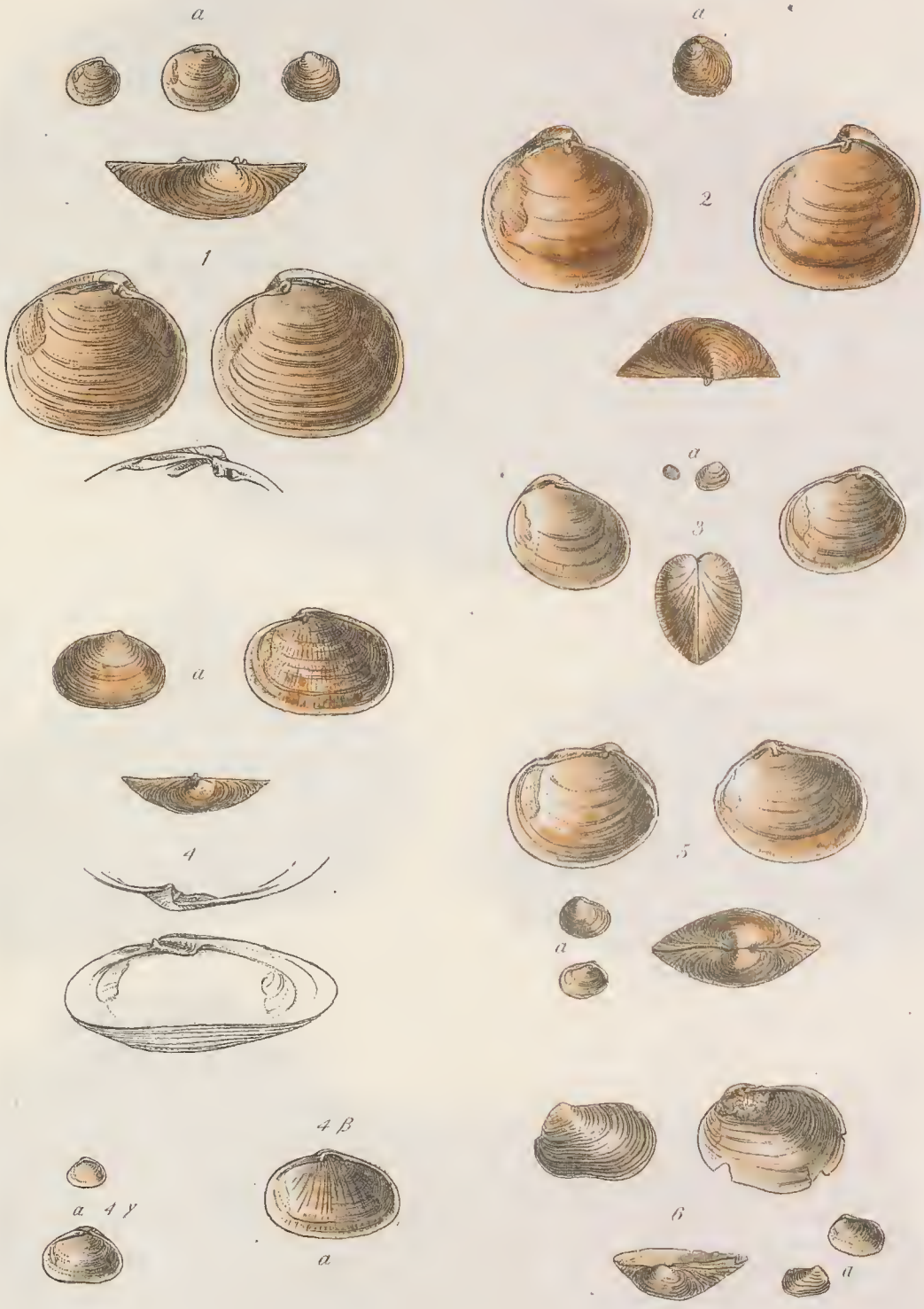
1. *Serpula avita.*
2. *Protrus.*
3. *Ilium*
4. *S. plana.*
5. *pusilla.*
6. *Turbinella.*

a, mag.d

Mar 1 1844

Glycimeris Vagina.

Mar 1. 1841.



1 Kellia suborbicularis. 4. Kellia Jubia (1 β.4γ. vars.)
2 " orbicularis. 5 " flexuosa
3 " pumila. 6 " excladea.
a. natural size.

Mar. 1. 1844.

Cirrus tubulatus

Gav. I. 1811.

SERPULA ? extensa.

TAB. DCXXXIV.—*fig.* 1.

Spec. Char. Nearly straight, faintly corrugated; shell thick, the greater portion of it free; aperture round.

Syn. Serpula extensa, *Brand. Foss. Hants.* 12. *pl.* 1. *f* 12. *Morris, Catal.* 66.

The tube diminishes slowly and regularly until near the apex, when it contracts rather suddenly. The surface is marked with broad, annular, slightly raised ridges, which are numerous and nearly equal; otherwise the shell is smooth; it is composed of several laminæ, which together give a considerable thickness.

Great numbers of solitary fragments of this shell are found in Barton Cliff, but any mark of attachment is rarely met with. It has long been doubted whether these fragments may not be portions of the tubes of *Teredo antenautæ*; but the shell of them is thicker than *Teredo* generally has it, and I am not aware that they are ever found at Barton with remains of wood around them. Clusters of very similar tubes occur at Bognor imbedded in fossil wood; sometimes they are even more tortuose, and therefore more like the usual form of *Serpulæ*; in these however the shell is still thin and fragile. The specimens figured are in the cabinet of Mr. Edwards.

Fig. 1. *a.* is a magnified representation of a portion showing the surface of attachment.

SERPULA flagelliformis.

TAB. DCXXXIV.—*fig.* 2 & 3.

Spec. Char. Attached by its whole length; tortuous, increasing very gradually towards the mouth; shell thin, smooth, with slightly raised annular undulations; mouth round, its diameter half a line.

Syn. Vermilia flagelliformis, *Morris, Catal.* 67.

Found attached to shells in the sandy beds of the London clay in Bracklesham Bay, by F. E. Edwards, Esq. It is one of the most simply formed species we know, and differs from the recent *S. vermicularis*, Linn., in the total absence of a keel. A *Serpula* occurs in the crag which only differs in being rather larger than the biggest specimen (fig. 2.) from the clay.

SERPULA exigua.

TAB. DCXXXIV.—*fig.* 4.

Spec. Char. Attached throughout, involute, discoid, smooth, minute; tube depressed, enlarging gradually towards the aperture, which is transversely elongated; lines of growth oblique.

Attached to a small *Natica* found at Barton by Mr. Edwards.

SERPULA prismatica.

TAB. DCXXXIV.—*fig.* 5.

Spec. Char. Linear, four-sided, minute; lines of growth strong, bent acutely over the angles.

Syn. Vermilia angulata, *Morris, Catal.* 67.

Although the fragment of this shell be very imperfect, it is easily distinguished as a species by its square form.

Discovered in the clay at Chalk Farm by Mr. Wetherell, whose patient attention to the minute fossils of the London clay is so well known.

SERPULA trilineata.

TAB. DCXXXIV.—*fig.* 6.

Spec. Char. Linear, attached throughout, tortuose, minute; attached surface broad; on the back are three slightly elevated keels.

Syn. Vermilia trilineata, *Morris, Catal.* 67.

Fixed upon *Terebratula striatula*, found at Chalk Farm by Mr. Wetherell.

SERPULA heptagona.

TAB. DCXXXIV.—*fig.* 7.

Spec. Char. Cylindrical, with seven keels; free except near the apex, where it is conical, with 3 to 5 keels curved and attached; lines of growth strong; keels often expanded into variously undulating wings. Operculum funnel-shaped, its disc radiated.

Syn. Serpula heptagona, *Morris, Catal.* 66. Dentalium elephantinum, *Brander*, 11. *pl.* 1. *f.* 11.

This curious *Serpula* in the young state, which is rare, much resembles *S. crassa* (tab. 30.), but is distinguished by showing indications, first of two, and soon afterwards of two more keels, besides the dorsal one, making with the edges of the base in all seven angles; it is also rougher and more conical. The seven angles become equal upon the free shell. The operculum varies much in form, as shown in the figures *a.* and *b.*

Brander has confounded the free form of this *Serpula* with *Dentalium costatum* (tab. 70. fig. 8.) under the name of *Dentalium elephantinum.*

Not uncommon at Barton. The specimens figured are in Mr. Edwards's collection; we have the same species also from near Paris, sent to the late Mr. Sowerby by Mons. Defrance.

SERPULA avita.

TAB. DCXXXV.—*fig.* 1.

Spec. Char. Attached throughout, gradually enlarging, variously curved, subcylindrical, with an expanded base and a dorsal keel, which forms a spine projecting over the aperture; lines of growth arched; edge of the aperture thin.

Nearly related to the recent *Serpula triquetra* (*Vermilia*, Lam.), but differing in having a thinner keel and smoother sides.

Attached to a fragment of *Inoceramus* in chalk. Presented by Mr. Sankey in 1819, who found it at Dover.

SERPULA Proteus.

TAB. DCXXXV.—*fig.* 2.

Spec. Char. Attached for a great part of its length, smooth, subcylindrical, with the base expanded and a prominent thin keel along the back; the free part cylindrical with a small dorsal keel; a varix round the aperture, which is circular, with a sharp edge; lines of growth nearly straight.

The fixed portion of this *Serpula* strongly resembles *S. triquetra*, but it is smoother, and the straight lines of growth distinguish it from *S. avita*. A varix is formed before the tube rises from its support, and another grows round the extremity, in which it agrees with *S. ampullacea* (tab. 597. figs. 1–5.), but it is smaller than that species.

The individual figured is upon a *Plagiostoma spinosa*, in chalk from Kent.

SERPULA Ilium.

TAB. DCXXXV.—*fig.* 3.

Spec. Char. Filiform, slender, smooth, curled up into irregular masses; shell rather thick; aperture round, its diameter $\frac{1}{3}$rd of a line.

Syn. Serpula Ilium, *Goldfuss*, 234. *t.* 69. *f.* 10.

Distinguished from *Serpula Plexus* (tab. 598.) by its small size and less gregarious habit. I find nothing to distinguish it from *S. Ilium* of Goldfuss except it be a less tendency to curl in a spiral direction which he has given as the specific character.

From the chalk at Portsdown and Gravesend. Goldfuss has it from the upper beds of the Jura limestone of Streitberg.

SERPULA plana.

TAB. DCXXXV.—*fig.* 4.

Spec. Char. Attached, involute, discoid, smooth; base broad; aperture slightly expanded, nearly circular.

Syn. Serpula plana, *Woodward, Geol. Norfolk, t.* 5. *f.* 9. *Morris, Catal.* 66.

A small shell with only one or two turns; it is smooth, excepting a few sharp ridges produced by the expanded lip at successive periods of growth.

From Portsdown, Kent. Woodward's specimens were from Eastern Norfolk.

SERPULA pusilla.

TAB. DCXXXV.—*fig.* 5.

Spec. Char. Attached in part, involute, subdiscoid; the free portion erect, cylindrical; base expanded; surface obscurely granulated; aperture slightly contracted.

A small shell from the chalk of Norwich; it is attached to a young *Exogyra globosa*. The granulations are obscure and arranged in lines.

SERPULA Turbinella.

TAB. DCXXXV.—*fig.* 6.

Spec. Char. Wound into the form of an elongated cone attached by its apex; surface nearly smooth; whorls flattened, aperture contracted.

From Portsdown, with *S. Ilium*.

GLYCIMERIS, Lam.

Gen. Char. Equal-valved, transverse, thick, gaping at both sides; epidermis thick, extending beyond the edge of the shell; hinge-line thick, toothless; fulcra large, tumid; ligament external; muscular impressions two; impression of the attachment of the mantle deep, broad, rugged, with hardly any sinus.

A Genus related to *Panopæa*, and according to some, to *Solen*, but distinguished from both by the absence of teeth in the hinge, and the want of a sinus in the mantle: from *Solen* it also differs in having more equal and rounded sides. It is related to the *Myariæ* in having a thick projecting epidermis, which leaves the impressions of its wrinkles upon the shell. The foot of the animal as well as the length of its tubes must be however very different from those parts in the *Myariæ*, as well as in the above-mentioned genera. It is remarkable that the umbones are often eroded. The recent species inhabit the Northern Ocean.

GLYCIMERIS Vagina.

TAB. DCXXXVI.

Spec. Char. Transversely oblong-ovate, compressed, smooth; the anterior portion much the larger, rather attenuated and slightly convex; the posterior flattened, truncated, more or less angular. Width to the length as 7 to 3.

Syn. Glycimeris Vagina, *Wood in Ann. and Mag. Nat. Hist. v.* 6. 245. *Morris, Catal.* 88.

The different degrees of convexity of the two parts of this shell, which give to each valve when separate a peculiar twisted appearance, and the great distance of the umbones from the anterior extremity, will at first sight serve to distinguish it from the recent *G. Siliqua*, which is the only species at present known that resembles it. The rectangular form of the fulcra, and the angular, not rounded, outline, are additional characters. Neither does it appear to have the umbones eroded, as they generally are in *G. Siliqua*, and in many shells of the northern seas, as well as in those which live in lakes and freshwater rivers: it probably lived in a temperate climate, or at least in a situation where vegetable substances were not decaying around it.

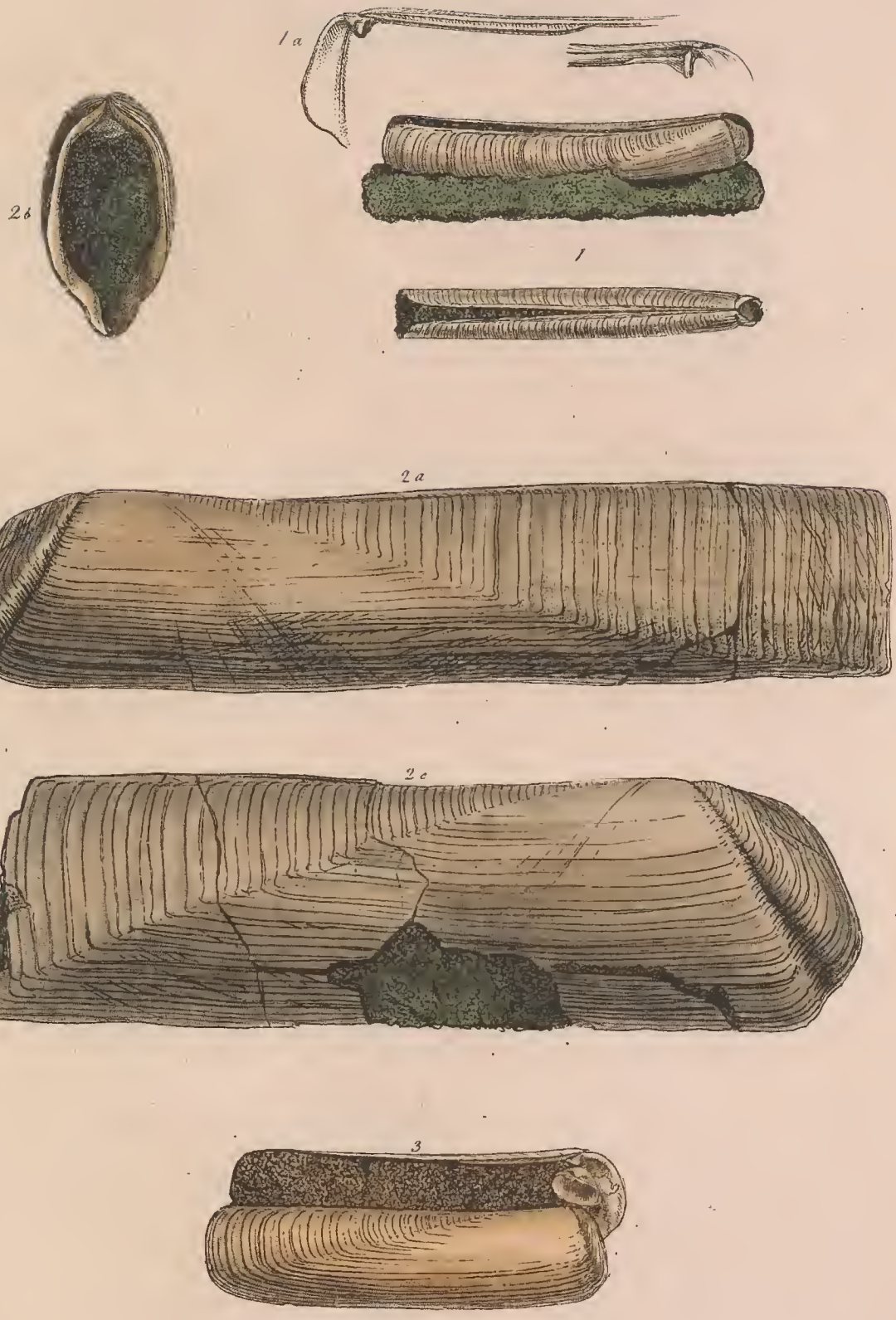
From the coralline Crag of Ramsholt, in the cabinets of the Rev. R. Wilson and S. V. Wood, Esq.; the latter gentleman has also traced it in the red crag of Sutton.

Verticordia cardiformis a.b.c.d. mag^a

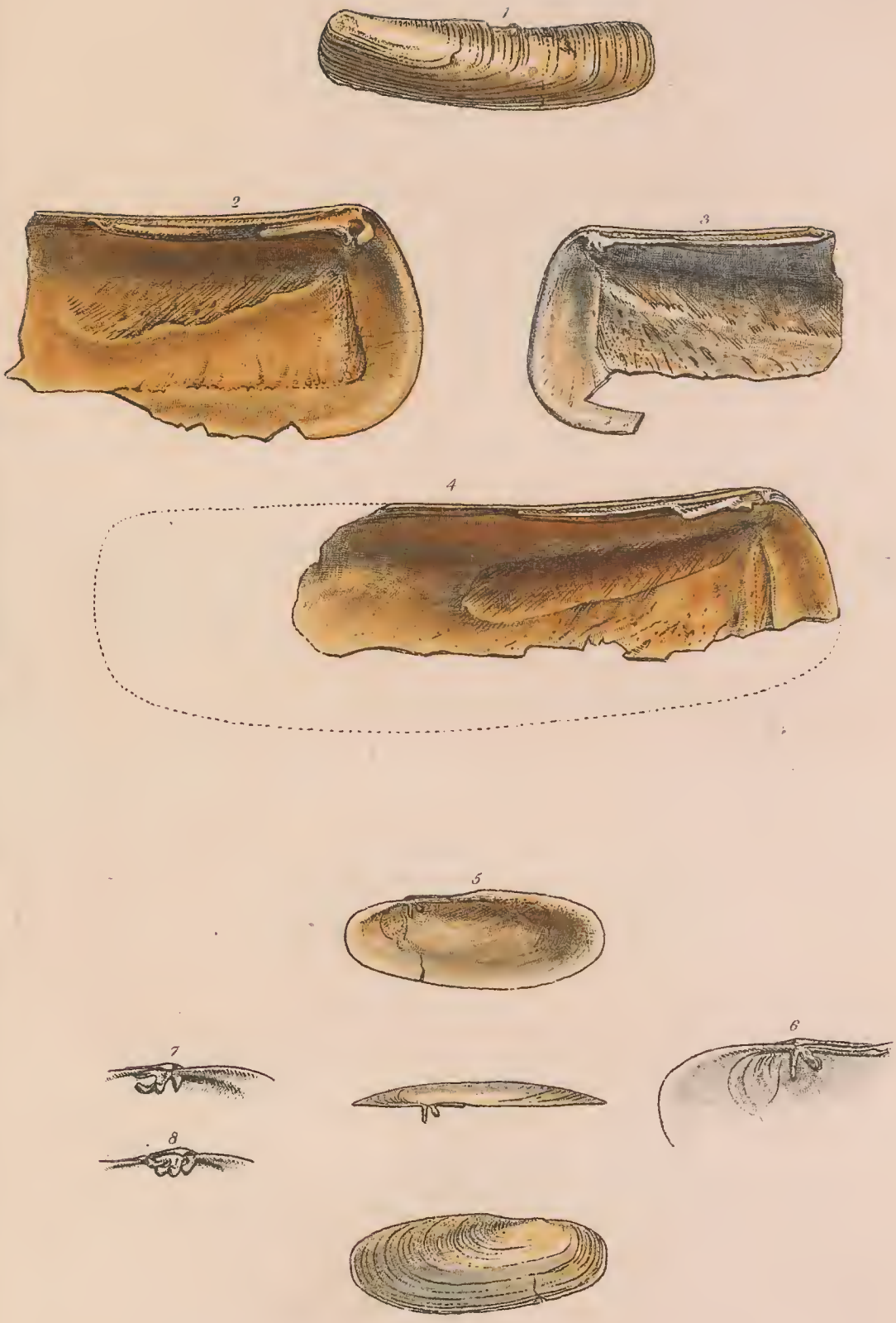
Aug 1. 1844.

1. 2 *Pleurotomaria rotundata.*
3 *carinata.*
4 *conica.*
5 *tumida.*

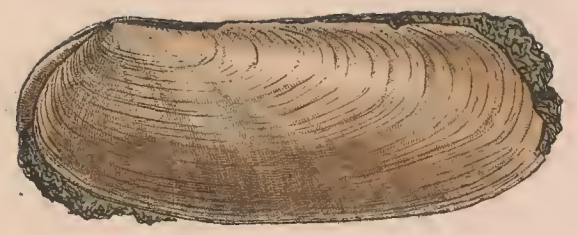
Aug 1st 1844.



1 *Solen gracilis.*
2 *obliquus.*
3 *Dixoni.*

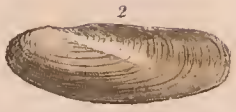


1 *Ensis ensiformis.*
2. 4 ..... *complanatus.*
5. 8. *Cultellus Cultellatus.*



1

3



2

4

5

Cultellus affinus

KELLIA, Turton.

GEN. CHAR. An equivalved, more or less transverse, slender bivalve; valves close at the sides; hinge with sometimes two central teeth and one lateral tooth in the left valve, sometimes only one central and no lateral tooth; ligament internal, linear, attached to a pit along and within the posterior edge of the hinge-plate; muscular impressions two, nearly orbicular; impression of the mantle obscure, entire?

DR. TURTON established this genus and gave the characters from a small recent British shell, discovered by Montague, who called it *Mya suborbicularis*. The genus is named in commemoration of Mr. J. M. O'Kelly of Dublin. Dr. Turton's definition is,—

"Shell somewhat globular, equivalved, closed; hinge with two approximate teeth and a remote lateral tooth in one valve, and a concave tooth and a remote lateral one in the other; ligament internal."

It has been necessary to alter this description that it may include several species so nearly related that Mr. S. V. Wood has arranged them together, and also to distinguish it from *Erycina*, Lam., which has a sinus in the impression of the mantle, and has a pit for the ligament between, not behind, the two cardinal teeth; nevertheless several fossil species of Lamarck's as well as of Deshayes' *Erycina* belong probably to *Kellia*.

The position of the surface or pit for the attachment of the ligament also distinguishes *Kellia* from *Mesodesma* of Deshayes, which is *Erycina* of G. B. Sowerby, but not of Lamarck.

KELLIA suborbicularis.

TAB. DCXXXVII.—*fig.* 1.

Spec. Char. Suborbicular, nearly equilateral, very convex, smooth; front rather straight; one lateral posterior and two cardinal teeth in the left valve, and one lateral and one cardinal tooth in the other valve.

Syn. Kellia suborbicularis, *Turton, Brit. Biv.* 57. *t.* 11. *f.* 5 & 6. *Wood, Ann. and Mag. Nat. Hist. v.* 6. 247. *fossil. Morris, Catal.* 89. *fossil.*
Mya suborbicularis, *Montague, Test. Brit.* 39. *Maton and Racket, Trans. Linn. Soc. v.* 8. 41. *Montague, Test. Brit. Supp. t.* 26. *f.* 6. *Turton, Brit. Fauna,* 167. *Dillwyn, Catal.* 55. *Wood, Index Test.* 13.
Tellina suborbicularis, *Turton, Conch. Dict.* 179.
Amphidesma physoides, *Lam. Hist. Nat. ed.* 1. *v.* 5. 493. *ed.* 2. *v.* 6. 130. fide G. B. Sowerby.
Bornia inflata, *Philippi, Enum. Moll. Sicil. v.* 1. 14. *v.* 2. 11.

A slight squareness appears to characterise the fossil specimens, which are also rather longer than the recent shells, but the difference is so small that Mr. Wood considers them the same species; I have therefore given the synonyms of the recent as well as of the fossil shell. The *Amphidesma physoides* of Lamarck is an Australian shell,

and therefore might have been supposed to be different; I have quoted it upon the authority of my brother, who has seen the specimen described by Lamarck. The *Mya orbicularis*, a recent Devonshire shell first described by Montague, is quoted by Philippi as much like his *Bornia inflata*, which is found both recent and fossil in Sicily, and agrees in description perfectly with our shell, an inhabitant of the coralline Crag of Sutton, and also of the pleistocene beds at Largs.

KELLIA orbicularis.

TAB. DCXXXVII.—*fig.* 2.

Spec. Char. Orbicular, oblique, tumid, with a slight ridge, concentrically striated, rugose, anterior side largest; only one tooth close to the beak in each valve; muscular impressions large, elongated.

Syn. Kellia orbicularis, *Wood, loc. cit. v.* 6. 247.

"This shell is retained in the genus *Kellia*, although it does not possess all the characters originally required, having but one tooth in each valve. The exterior has an apparent twist which gives it a slight obliquity, and the ventral margin nearly straight, consequently the disc a little flattened. The shell is exceedingly gibbose, the depth of each valve being equal to half its length. It somewhat resembles the preceding, but it differs in its dentition." From the coralline Crag, Sutton.

KELLIA pumila.

TAB. DCXXXVII.—*fig.* 3.

Spec. Char. Transverse, ovate, oblique, tumid, glossy, anterior side much the larger and rather longer than the other. One central and two lateral teeth in the right, and only obscure lateral teeth in the left valve.

Syn. Montacuta pumila, *S. V. Wood, loc. cit. v.* 6. 247.

This strongly resembles *Kellia rubra*, Turton, (*Cardium rubrum*, Montague, *Amphidesma nucleola*, Lamarck? *Bornia seminulum*, Philippi?) but appears to differ in several characters; it is more inequilateral and oblique, its lateral teeth are also smaller, especially the anterior one, and more removed from the centre. The *Bornia seminulum*, to which Philippi refers *Cardium rubrum*, has a larger number of teeth, and is less oblique also than our shell. The muscular impressions are large and ovate; the pit for the ligament is linear, small, and slopes inwards towards the posterior side.

Abundant in the lower crag of Sutton, with the two valves frequently united.

KELLIA dubia.

TAB. DCXXXVII.—*fig.* 4.

Spec. Char. Transversely elongate-oval with rather straight sides, slightly convex, smooth, tender; anterior side the smaller; one erect somewhat compressed tooth in the right valve, and one obtuse lateral tooth and one minute central tooth in the other valve.

Syn. Kellia dubia, *Wood, loc. cit.* 247. *Morris, Catal.* 89.

Externally smooth, with the exception of fine lines of growth; internally fine radiating lines are seen in some specimens. The muscular impressions are generally obscure, but one specimen shows the posterior one as subovate, the other more elongated, and the impression of the mantle without a sinus. This is the largest species of *Kellia* we know; it is subject to some variation in shape, as shown in figures β. and γ. We cannot agree with Mr. Wood in referring this to *Psammotea dubia* of Deshayes, because that is a gaping shell, and has a very different hinge. It is more like *Erycina anodon* of Philippi, vol. i. 13. t. 1. f. 20, but that is said to have a small, very obtuse sinus in the pallial impression, and is smaller, with the umbo differently placed.

Both the red and coralline Crag of Sutton afford this shell.

KELLIA flexuosa.

TAB. DCXXXVII.—*fig.* 5.

Spec. Char. Ovato-orbicular, transverse, convex, smooth; anterior side the larger; superior margin of the right valve thin, sharp and flexuose. One central tooth in the right valve and two in the other. Lateral teeth obsolete.

Syn. Kellia flexuosa, *Wood, loc. cit. v.* vi. 247. *Dec.* 1840. Lucina oblonga, *Phil. v.* i. 34. *t.* 4. *f.* 1. Loripes ellipticus, *Scacchi, Catal. p.* 5. 1. Scacchia elliptica, *Phil. v.* ii. 27. *t.* 14. *f.* 8. (1844.)

The peculiar folds of the margin on both sides the umbo of the right valve produce corresponding sinuses on the edge of the left valve, as may be most distinctly seen when the valves are together. There are two teeth in the left valve, that nearest the beak being placed longitudinally; the other is almost at right angles with it and is produced along the hinge-line. The pit for the ligament is elongated, small, and under the posterior portion of the hinge-line. The muscular impressions are large.

An abundant shell in the coralline Crag at Sutton, but rarely found with the valves united. It is living on the coast of Sicily.

KELLIA cycladea.

TAB. DCXXXVII.—*fig.* 6.

Spec. Char. Transverse, ovato-quadrangular, tumid, slightly oblique, very thin, smooth, the posterior side much the smaller; one obscure tooth in each valve.

Syn. Kellia cycladea, *Wood, loc. cit. v.* vi. 247.

Unfortunately only two or three single valves of this extremely fragile shell have come under our notice, and they are not quite perfect. It much resembles a fresh-water Cyclas in general aspect and texture. The squareness of its form with a slightly concave basal margin distinguish it at first sight from every other *Kellia*. Occurs rarely in the coralline Crag at Sutton.

The shells on this plate are all in the cabinet of S. V. Wood, Esq., who has kindly supplied me with copious notes, of which I have gladly availed myself in the above descriptions, adding a few observations in consequence of the publication of Philippi's second volume since I received

Mr. Wood's favour. It is probable that the genus *Kellia* may be subdivided, and especially that *Scacchia* may be adopted by naturalists; but I have preferred to retain Mr. Wood's names, trusting to his experience and careful examination of such minute subjects.

CIRRUS tabulatus.

TAB. DCXXXVIII.

Spec. Char. Spire conical; in the old shell the latter whorls are more expanded, strongly marked by lines of growth; upper part of each whorl flat or somewhat concave, bounded by an obtuse, uneven keel, the lower part rounded; umbilicus very large; aperture suborbicular, truncated above; height less than the width.

Syn. Cirrus tabulatus, *Phill. Geol. Yorks.* 225. *pl.* 13. *f.* 7. *Morris, Catal.* 142. *Griffiths, Notice of Fossils of Mount. Lime.* 20.
Cirrus euomphaloides, *Griffiths as above*, 20. *and pl.* 7. *f.* 4.

A rather rugged-looking shell, distinguished from *Euomphalus pentangulatus*, M. C. t. 45, by its conical form, rough surface, and great size, for it sometimes reaches a foot in diameter. There is a peculiarity in its structure arising from its mode of growth: additions to the shell are made by thin layers, which are very thin where they line the tube, but instead of being continued far beyond the aperture to add to the length of the whorl, they are reflected against the edge of the lip, and at the same time much thickened, so that it is by the added thickness of each coat only, which however is considerable, that the increase of the lip takes place; as the layers are composed of fibres arranged perpendicularly to their planes, a section of the shell across the axis shows these fibres nearly parallel to its surface, or

rather diverging from an imaginary central line towards both the inner and outer surfaces, as shown at fig. 4, and partly in fig. 3. When several of the coats are broken off the exposed portions of those remaining have the appearance of trumpet-shaped tubes inserted into one another, as may be seen in figures 2. and 3: a longitudinal section, that is, in the direction of the axis of the shell, shows fibres perpendicular to the surface, as round the aperture in fig. 1: this structure was first pointed out by Mr. Lonsdale, who had a portion (fig. 4.) polished in which the variation of colour assists in developing the thickness of the layers. A similar structure may be traced, less readily, in *Euomphalus*. The edge of the mouth has a slight sinus, formed by the projecting keel that runs round the spire upon the whorls; it is otherwise even, and is continued over the preceding whorl; it is placed more perpendicularly than in *Euomphalus pentangulatus*; in old subjects it becomes elliptical and transverse. A few obscure furrows may be observed along the whorls, and add somewhat to the rugosity of their upper parts; the base and the umbilicus are particularly smooth. In old shells septa are formed which separate the smaller whorls, as in many other spiral shells, especially in *Euomphalus*.

This appears to be an abundant shell near Kendal; our figure 3. is taken from a portion of one sent me by the Rev. Mr. — Fisher from that place, and several fine specimens from the same locality are preserved in the University Museum at Cambridge. Fig. 1. is from the best individual in Mr. Gilbertson's collection, at the British Museum; fig. 2. from Settle in Yorkshire; and fig. 4. a section made by Mr. Lonsdale of a fragment from Ireland, placed in the cabinet of the Geological Society by the Earl of Enniskillen. It also occurs in Northumberland and other places in the middle and lower beds of the carboniferous limestone.

Cirrus acutus, tab. 141. f. 1, is distinguished by the form of the upper portion of the whorl.

HIPPAGUS, Lea.

Gen. Char. Shell equivalved, cordiform, longitudinally costated; hinge with a subinternal ligament winding up under the umbones, and one obtuse tooth which is in the right valve; fulcrum of the left valve linear, apparently tubular; a lunette under the beaks.

Syn. Verticordia, *S. V. Wood, MSS.*

"I have ventured to propose a new genus for the reception of a shell I had with doubt placed in the genus *Cryptodon* in my 'Catalogue of Shells from the Crag,' and to remove it from that genus in consequence of its rugosely costated exterior and its internal ligament. It resembles in general appearance a *Venericardia*, but differs from that genus in the position of the ligament and the want of solidity about the hinge. It is further characterized by the short fulcrum or portion of the hinge (in the left valve) with a circular perforation or opening (at its extremity), into which the ligament appears to have entered laterally from the posterior side: there is a prominent obtuse tooth in the right valve, with a sort of notch in the opposing one for its reception; beneath the umbones is a deep semicircular lunette, particularly marked in the left valve; one ovate muscular impression is seen in the anterior side, the second impression is indistinct, the interior is smooth and nacreous."

"The generic name is one of the synonyms of the Goddess of Beauty, and is also appropriate from the elegant curvature of this cordiform shell."

The above description was drawn up by Mr. S. V. Wood previous to the publication of the second volume of the *Enumeratio Molluscorum Siciliæ* by Philippi, where a recent Mediterranean shell is described and figured (*Hippagus acuticostatus*) which differs only in slight specific characters from the subject before us; Philippi has referred this shell to the genus *Hippagus* of Lea, (Contributions to Geology, Philadelphia 1833. p. 72. pl. 2. f. 50, *Hippagus*

isocardioides,) a minute fossil in many respects closely related to it, but said by Lea to be destitute of teeth: as he says nothing about the ligament, but mentions the close approach of its general characters to those of *Isocardia*, it is probable that the ligament winds up under the beaks as in that genus, and so Philippi describes it in his *H. acuticostatus*. The general form of Lea's type of *Hippagus* is very different, but the resemblance of the hinge is great, and he says the edge of the shell is toothed; upon the whole therefore we adopt his genus for this shell, but with doubt, and have made some additions to his Gen. Char. with a view to its including both shells. The name *Verticordia* was hastily adopted on early impressions of the plate from Mr. Wood's manuscript, but is objectionable, having been long ago applied to a plant.

HIPPAGUS ? cardiiformis.

TAB. DCXXXIX.

Spec. Char. Convex, orbicular, costated; costæ 15 or 16 prominent, obtuse, rugosely squamose, projecting beyond the edge, furrows finely granulated; umbones incurved.

Syn. Cryptodon Verticordia, *S. V. Wood, Catal. Ann. and Mag. Nat. Hist. v.* vi. 247.

An orbicular shell, rendered beautiful by the curvature of its ribs and almost pectinated margin; internally the ribs are indicated by slight furrows. It is produced by the coralline Crag of Sutton; about twenty individuals, single valves, have been found.

Hippagus acuticostatus (Phil. Enum. v. ii. 41. tab. 14. f. 19.) is distinguished by sharp lamellar ribs, of which there are only 13, not 15 or 16 which our shell has, and by the corresponding furrows within being confined almost to the margin, neither do they project so far beyond the edge of the shell; in size and other respects the two shells hardly differ.

PLEUROTOMARIA, Defrance.

GEN. CHAR. A trochiform spiral shell, with an angular sinus near the middle of the outer lip, from which a band marked with lines of growth that indicate the sinus is carried round the whorls; no beak or sinus at the base of the aperture; a columella with or without an umbilicus.

A GENUS of shells only known in the fossil state; the species vary much in the elevation of the spire, but are generally short shells. It is named *Pleurotomaria*, because it bears the same relation to *Trochus* as *Pleurotoma* does to *Fusus*; some of the most elongated species occur in the Silurian system of rocks, others are met with in various parts of the series up to the greensand, where the newest is found; they are most abundant in the mountain limestone, and not unfrequent in the lower oolite. The following is a list of the species already published under various names in the 'Mineral Conchology': *Helix carinatus*, tab. 10. f. 2; *H. striatus*, t. 171. f. 1; *H. cirriformis*, t. 171. f. 2; *Trochus anglicus*, t. 142; *T. punctatus*, t. 193. f. 1; *T. elongatus*, t. 193. f. 2–4; *T. abbreviatus*, t. 193. f. 5; *T. fasciatus*, t. 220. f. 1; *T. granulatus*, t. 220. f. 2; *T. sulcatus*, t. 220. f. 3; *T. ornatus*, t. 221. f. 1; *T. bicarinatus*, t. 221. f. 2; *T. reticulatus*, t. 272. f. 2; *T. Gibsii*, t. 278.

PLEUROTOMARIA rotundata.

TAB. DCXL.—*fig.* 1 & 2.

Spec. Char. Turbinate, irregularly striated; whorls 4 or 5, regularly convex; band rather broad, flat, slightly elevated, placed above the most prominent part of the whorl; base convex; columella solid, cylindrical, accompanied by a spiral ridge; aperture nearly orbicular.

Distinguished from *Pleurotomaria* (*Helix*) *carinata* of tab. 10. and fig. 3. of the present plate by its taller spire, rounder whorls, and smoother surface (see letter *a*), but more particularly by the solid columella and its accompanying ridge; the band also is less raised. Fig. 2. is from a younger, smoother, less elevated specimen, but it bears the characteristic ridge of the species.

These specimens are I believe from Bolland; they are all I have seen of the species.

PLEUROTOMARIA carinata.

TAB. DCXL.—*fig.* 3.

Spec. Char. Turbinate, conical, short, neatly striated all over in both directions; whorls 5 or 6, less convex above the band which is raised, convex and moderately broad; base convex, umbilicated; aperture rather angular.

Syn. Pleurotomaria carinata, *Phill. Geol. Yorks.* 226. *pl.* 15. *f.* 1. *Min. Conch. Index to* 6 *volumes. Morris, Catal.* 158.
P. flammigera, *Phill. Geol. Yorks.* 226. *pl.* 15. *f.* 2.
Helix carinata, *Min. Conch. t.* 10.

Having ascertained by more perfect specimens that the *Helix carinata*, Min. Conch., and *Pleurotoma flammigera* of Phillips are the same species, I have taken the opportunity, while figuring some others of the same genus, to give another representation of that shell: the former figure did not show the zigzag marks of colour which are so remarkably preserved, nor the form of the aperture, which is probably the reason why Prof. Phillips did not think his *P. flammigera* to be the same. The outline at the back shows the size it sometimes attains.

De Koninck, in his work on the fossils of Belgium, has figured it with its coloured marks, and Goldfuss (tab. 183. f. 9.) has given the same shell, but neither of these authors has yet published the name.

PLEUROTOMARIA conica.

TAB. DCXL.—*fig.* 4.

Spec. Char. Conical, with straight sides and prominent convex base; whorls flat above, convex below the band, transversely and elegantly striated; striæ above the band very oblique, arched; band concave, prominent, with a furrow beneath it; umbilicus closed, with a thin columella.

Syn. Pleurotomaria conica, *Phill. Geol. Yorks.* 228. *pl.* 15. *f.* 22. *Morris, Catal.* 158.

The band around the margin of this elegant shell is narrow and so hollow as to appear like two sharp ridges or keels, and the furrow below produces almost a third ridge, particularly in some specimens. The striæ above the band are numerous, elevated, slightly curved and very oblique; the striæ below the band are equally numerous and elegantly curved.

P. striata (*Helix*, Min. Con. tab. 171.) has slightly convex whorls, more distant, less oblique and stronger striæ, a wider and flatter band, and shorter spire, otherwise it bears a strong resemblance: they both are liable to be variegated with dark brown.

Found in the carboniferous limestone of Bolland.

PLEUROTOMARIA tumida.

TAB. DCXL.—*fig.* 5.

Spec. Char. Depressed, nearly smooth; whorls few, rounded, convex above with a slight canal near the suture, very convex beneath; umbilicus small with a sharp edge; band moderately broad, sunk; aperture transversely ovate.

Syn. P. tumida, *Phill. Geol. Yorks.* 226. *pl.* 15. *f.* 3. *Morris, Catal.* 159.

Remarkable for the rapid increase of the whorls and the slight depression in them near the suture. The specimen has lost much of the shell, but what remains is of a very dark colour except a white stripe below the band. Sent to me from Bolland by Mr. Gilbertson.

SOLEN, Linn.

GEN. CHAR. Equivalved, very inequilateral and transverse, straight, gaping at both ends; superior and inferior margins parallel; umbones nearly close to the anterior extremity. Hinge with one direct tooth in each valve; ligament external, strong, attached to long linear fulcra. Epidermis thick. Muscular impressions two, the anterior wide, elongated, parallel to the fulcrum; the other submarginal, distant from the beaks. Palleal impression with a deep sinus. Epidermis thick.

Animal with the mantle closed except at the extremities.

THE division of the genus *Solen* of Linnæus into five genera, and the discovery of several species in a fossil state of four of the genera, have rendered it necessary to give an amended generic character. Amidst the various opinions as to the number of genera into which it should be divided, the separation of all those shells whose umbones are not quite lateral is most general; and next, the presence of lateral teeth in the hinge is allowed as sufficient to distinguish another group, which is however very artificial, and the genus *Solen* is thus limited as in the above GEN. CHAR.; but it may hereafter be further divided into two subgenera, one of them being characterized by a longitudinal furrow near the anterior margin, which the other does not possess. The

fossils we are about to describe belong to the first division.

This shell affords an excellent example of a continuous line of muscular impressions from the beaks along the line of attachment of the mantle, forming a complete circuit; they are very strong at the anterior edge, where they support the powerful muscles of the cylindrical foot, the rapid action of which, when boring down into the sand, has been so often remarked; the animal is said to descend sometimes two feet perpendicularly with great rapidity.

There are several recent as well as fossil species, all of which are littoral shells. *Solen vagina*, Linn., is the type of the genus.

SOLEN gracilis.

TAB. DCXLI.—*fig.* 1.

SPEC. CHAR. Transversely linear, seven times as wide as long, subcylindrical, slightly curved, smooth; anterior portion separated by a direct furrow, small but rather wide, its upper margin oblique; the posterior extremity slightly rounded.

THIS is a pretty shell, much like the *Ensis* (*Solen Ensis*, Linn.) of the British shores, but it is more convex; its generic characters also distinguish it. It is one of the most interesting among the many discoveries of new shells made at the Barton Cliff by Mr. F. E. Edwards. Several specimens were picked up.

Fig. *a.* is an enlarged representation of the hinge.

SOLEN obliquus.

TAB. DCXLI.—*fig.* 2.

Spec. Char. Nearly five times as wide as long, straight, slightly convex, posteriorly flattened, strongly marked with lines of growth; anterior portion separated by a deep oblique furrow, which is distant from the very obliquely truncated margin; posterior extremity square.

Syn. Solen obliquus, *Dixon, Geol. Suss. ined. tab.* . . . .

A shell well-distinguished by its obliquely truncated anterior extremity and the furrow parallel to it. The lines of growth are strongly marked, the edges of the laminæ being often imbricate; there are also a few obscure oblique radiating striæ on the surface.

Discovered at Bracklesham Bay by Mr. F. Dixon and Mr. F. E. Edwards, who have kindly favoured me with specimens; it was abundant in one spot.

Fig. 2. *b.* represents an end view of the shell.

SOLEN Dixoni.

TAB. DCXLI.—*fig.* 3.

Spec. Char. Four and a half times as wide as long, straight, regularly convex, smooth; anterior side very slightly oblique, its furrow rather distant; posterior extremity rounded; fulcrum very long.

We have great pleasure in dedicating this new species to F. Dixon, Esq. of Worthing, whose forthcoming work on the Tertiary and Chalk formations of Sussex will bear ample testimony to his zeal and perseverance in bringing to light a great number of new and interesting fossils. The species before us resembles very much the *S. vaginalis*, Desh., which is found at Grignon, but that is a thinner shell and has a much shorter fulcrum.

ENSIS, Schumacher.

GEN. CHAR. Equivalved, very inequilateral, transverse, slightly arched; gaping at both ends, margins parallel, umbones close to the anterior extremity. Hinge with one conical erect tooth in the right valve, and two compressed erect teeth in the left valve, and an elongated transverse lateral tooth, connate with the fulcrum, and the erect teeth, in each. Muscular impressions, &c. as in *Solen*.

THE presence of the long lateral teeth in the hinge is so strong a character, that we cannot avoid adopting Schumacher's genus. We are not prepared to say it is positively a natural genus, but most, if not all, of the species are a little arched, and none of them have the anterior side defined by a furrow, which is so often the case in *Solen*: these general relations, although slight, have some pretensions to natural characters; moreover, the long lateral teeth, whose office is to steady the valves when they open, must have reference to some habits of the animal in which it differs from *Solen*. *Solen Ensis* of Linnæus is the type of the genus; it includes also *S. siliqua*, and a few others.

ENSIS ensiformis.

TAB. DCXLII.—*fig.* 1.

SPEC. CHAR. Gently curved, thin, smooth, convex, about four times as wide as long, the two angles of the posterior and the lower angle of the anterior extremities rounded; the posterior portion a little flattened; the basal edge

more curved than the opposite; cardinal teeth small, lateral teeth more than one-third the length of the long fulcra.

Syn. Solen ensiformis, *S. V. Wood, Ann. and Mag. Nat. Hist. v.* vi. 245.

From *Solen siliqua*, Linn., our shell differs in its proportional width, which is much less, and in its greater degree of convexity; also in the absence of an angle separating the upper edge of the posterior area; from *Solen Ensis*, Linn., *Ensis magnus*, Schum., in having only half the proportional width.

From the coralline Crag of Ramsholt, and the red Crag of Walton Naze.

ENSIS complanatus.

TAB. DCXLII.—*figs. 2, 3 and 4.*

Spec. Char. Slightly curved, strong, smooth, compressed, anterior side shortest, angles rounded. Anterior hinge-tooth large, lateral teeth less than one-third the length of the long fulcra.

Syn. Solen siliqua, *Morris*, 101. *Wood, Ann. and Mag. Nat. Hist. v.* vi. 245.

The regular very slight convexity, less width, and the want of an angle to separate the posterior area from the hinge-slope, are marks by which this species is known from the recent *Ensis siliqua.*

Found at Sutton in the red, and at Bramerton in the mammiferous Crag. The specimens figured were in the late Mr. Parkinson's collection.

CULTELLUS, Schumacher.

Gen. Char. An equivalved, inequilateral, transverse, compressed shell, with slightly gaping, seldom truncated sides. Hinge-teeth in the right valve, two, one longitudinal, erect, the other (posterior) oblique, decumbent; in the left valve, three, the central one bifid with divaricating apices, fulcrum long, marginal. Beaks distant from, but nearest to, the anterior extremity. Epidermis strong.

More or less oval, transversely elongated, generally shining, tender shells, with the beaks at about one-third the width from the anterior extremity. This genus includes the shells arranged by De Blainville under the third division of his genus *Solenocurtus*, and the first section of his genus *Solen*. But the characters of the hinge are sufficiently alike in all the species we know to connect them, although their forms are various.

CULTELLUS cultellatus.

TAB. DCXLII.—*fig.* 5—8.

Spec. Char. Shell elongate-ovate, with obtuse, slightly gaping sides, smooth; beaks one-third the width of the shell from the anterior extremity, dorsal and basal margins arched;

posterior tooth of the right valve the shorter, notched; muscular impressions round.

Syn. Cultellus cultellatus, *S. V. Wood in Ann. and Mag. Nat. Hist. v.* vi. 245.

A very fragile and rare shell, differing in its oval shape as well as in the form of the hinge-teeth from *C. affinis*, from *Solen tenuis* of Philippi and Nyst, and *Solen fragilis* of Lamarck, to any one of which it might possibly be referred.

We are indebted to S. V. Wood, Esq., for the use of the specimens figured. The species occurs in coralline Crag of Sutton and the red Crag of Walton Naze.

CULTELLUS affinis.

Spec. Char. Transversely elongated with rounded extremities, compressed, shining, obscurely radiated, upper and basal edges nearly straight and parallel, the anterior margin slightly reflected and thickened within. Width three times the length. Posterior hinge-tooth in the right valve the larger and flattened.

Syn. Solen affinis. *Min. Con. t. 3.*

The larger figures upon this plate are from fine specimens discovered in the Barton Cliff by Mr. F. E. Edwards; in them the edges are so much more parallel than in the Highgate (young?) shells, that they have been thought a distinct species, and have received the manuscript name of *Bartonensis*; however, the lines of growth near the beaks show that the young shell was more elliptical, and therefore I must suppose them to be all one species. Small individuals have been found at Bognor. The teeth of the hinge distinguish it from *Cultellus cultellatus.*

1 Solecurtus Parisiensis.
2 — striyillatus.
3 quadratus n.s.

J. Sadler del.

Madeley lith. 3 Wellington St. Strand.

1. 2. 3. *Astarte ovata*
4. 5. — *Hartwellensis*

March 1st 1845.

1

3

2

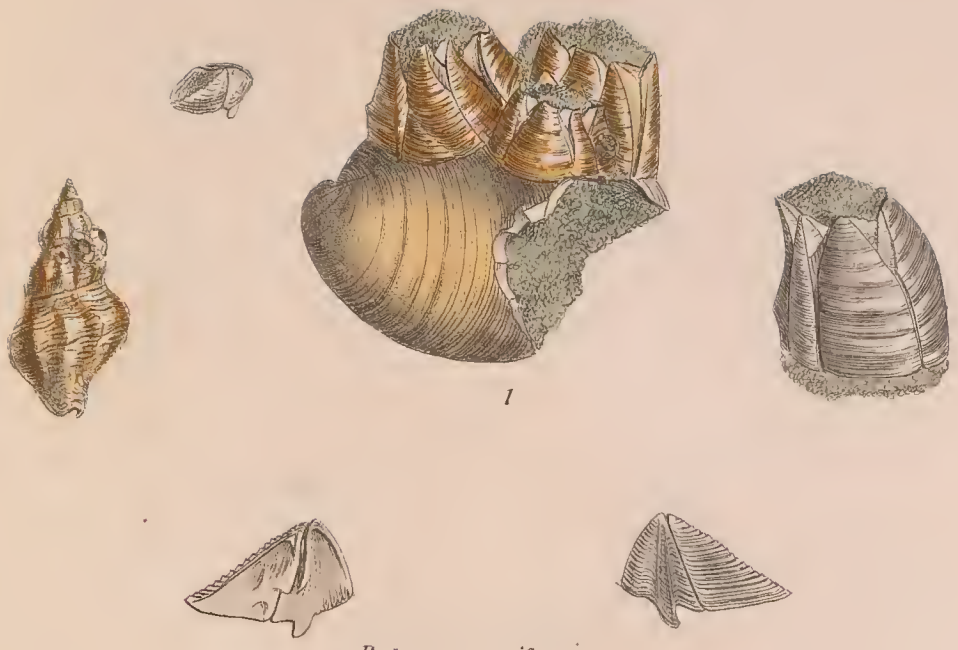
Unio Valdensis.

J Salter, del

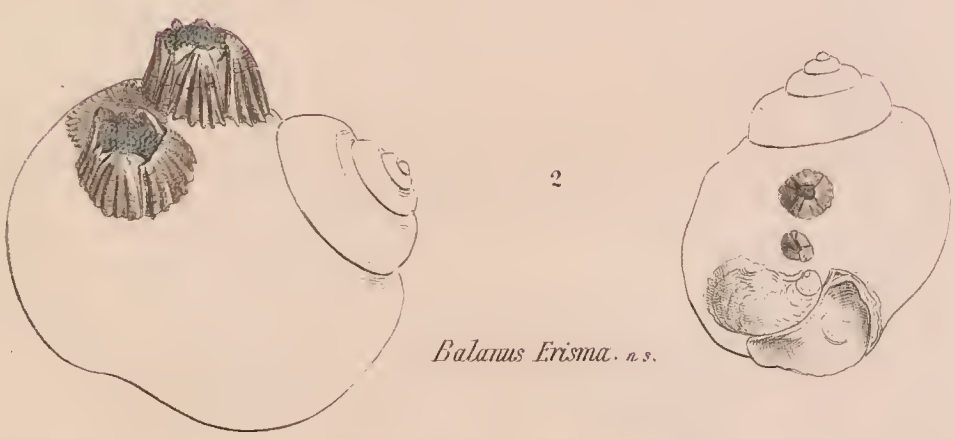
March 1st 1846.

Madeley, lithn. 3 Wellington St Strand

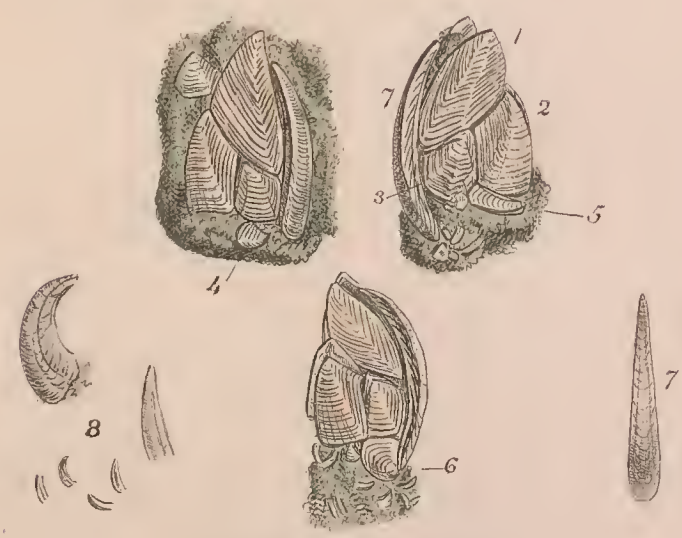
1. *Pollicipes concinnus.*
2. ——— *planulatus.*



Balanus unguiformis. n.s.



Balanus Erisma. n.s.



Xiphidion quadratum. Dixon.

Dec^r 1 1845

Strictures upon the commencement of a Publication entitled "*Conchologie Mineralogique de la Grande Bretagne, par* James Sowerby.—*Traduction Francaise revue, corrigee, augmentee, par* L. Agassiz." With a Reply by Prof. Agassiz, and a Letter from Mr. J. D. C. Sowerby.

(*From the MAGAZINE OF NATURAL HISTORY, New Series*, 1839, *p.* 254.)*

Some numbers of a work have, within the last few days, come under our notice, the publication of which we see with no small share of surprise, mingled with a feeling not far short of indignation. The covers bear the following indication of their contents.—"Conchologie Mineralogique de la Grande Bretagne, par James Sowerby.—Traduction Française revue, corrigée, augmentée, par L. Agassiz." A French version of the text of Mr. Sowerby's Fossil Conchology, with coloured imitations of the accompanying figures, and this published at one fourth the cost of the original work, is about the last thing we should have looked for from the hands of Louis Agassiz. The illustrations, for the most part, are but sorry imitations, though sufficiently characteristic to serve for the identification of the species, and thus check at least the foreign demand for a work, upon which so many years of toil have been expended. As a set-off against this undue appropriation of the labours of another,—this inroad upon the property of a fellow-labourer in the field of science, we are told that "l'utilité d'une édition Française du Mineral Conchology, mise à la portée de toutes les bourses devant être incontestable aux yeux de tous ceux qui favorisent les progrès de la Géologie."

Now if some noble patroniser of science in this country, acting under a belief that an English translation of the 'Poissons Fossiles,' with a fac-simile of the numerous illustrations, if published at ten shillings each part, instead of thirty, would be very acceptable to all those who are favourable to the progress of Geology, either by the aid of a government grant, or from his own private resources, were to carry this

---

* Prof. Agassiz having sent out with the last livraison of his 'Poissons Fossiles' copies of his answer to the Remarks in the Magazine of Natural History, the Editor has in consequence struck off copies of the *entire* discussion for distribution.—Ed. Mag. Nat. Hist.

idea into execution, the "*utilité*" of such an edition would, in this case, be equally incontestable, and probably no one would be better able to appreciate its value than Louis Agassiz himself. We believe the number of copies of Agassiz' work sold in this country exceeds one hundred, and were this demand supplanted by an English translation, we would not venture to predict how many more livraisons of the 'Poissons Fossiles' would be forthcoming. Of this we feel satisfied, that the Fossil Conchology would never have been undertaken, if its authors (the Messrs. Sowerby) had anticipated such a course as that pursued in the present instance by Agassiz; and if his first speculation succeed, we suppose he will follow it up with a regular system of piracy upon the literary productions of English naturalists.

Personal knowledge, and a feeling of respect for the proud position in the zoological world occupied by the author of the 'Poissons Fossiles' make us, on the present occasion, most reluctant censurers.—Agassiz has met with the most cordial support on all sides, and in various ways, from the cultivators of science in this country; and although it may appear harsh thus to express ourselves, we do not hesitate openly to declare our conviction, that in editing a transcript in the French language of the 'Mineral Conchology of Great Britain,' its author cannot be said to have really promoted the objects of science, still less to have added to his own reputation.

Letter from Prof. Agassiz *on the subject of the French Edition of the 'Mineral Conchology of Great Britain.'**

Neuchatel, Mai 15, 1839.

Monsieur,

Je viens de lire dans votre journal (N. 29) une incrimination odieuse de la part que j'ai prise à la publication que fait dans ce moment M. Nicolet, d'une édition à bon marché de la 'Conchyliologie Minéralogique' de J. Sowerby.—Rien ne me paroîtroit mieux mérité que les reproches qui m'y sont addressés, si les assertions et les insinuations que renferme cet article n'étoient d'un bout à l'autre perfides ou mensongères. Puisque vous avez accueilli cette accusation dans votre journal, j'attends de votre loyauté que vous y insérerez ma justification dans votre plus prochain No.

Malgré l'immense importance de l'ouvrage de Sowerby sur les fossiles d'Angleterre, cette publication n'a pu trouver qu'

* Mag. Nat. Hist. Vol. iii. n. s. p. 356.

un petit nombre d' acquéreurs sur le continent. Aussi le connaissance que j'ai des établissements scientifiques des localités les plus importants d' Europe m'a telle donné *la certitude* qu'une édition Françoise ou Allemande de cet ouvrage, si elle pouvoit être publiée à meilleur marché que l' original, seroit un vèitable service rendu à la science, *sans nuire en aucun façon à l'édition originale*, qui s'est surtout écoulées en pays Anglois. N'y auroit-il pas dès lors mauvaise foi à représenter une pareille publication comme une piraterie systématique? comme si des traductions d'ouvrages scientifiques ne se feroient pastous les jours au gré des auteurs, et à plus fort raison après leur mort! et comme si, en fesant ce que vous, auteur d'un journal scientifique, vous devez savoir être de bon droit, je devois causer la ruine des héritiers de Sowerby, en les privant du bénéfice d'une publication dont ils disposent depuis plus de quinze ans, et qui est terminée depuis dix, après avoir reçu deux volumes posthumes. Mais il y a plus, lorsque j'ai engagé un lithographe d'ici,—M. Nicolet,—à faire un Sowerby à bon marché, je lui ai fourni *gratuitement* la traduction du texte, enrichie *de nombreuses additions et corrections*. Il est donc absolument faux de dire que l'édition Françoise de Sowerby, dont il s'agit, n'est qu' une mauvaise contrefaçon des planches de l'ouvrage Anglois, accompagnée d'une simple translation du texte. Je n'aurois jamais prêté mon nom à une pareille machination. Je dois donc trouver bien étrange la conduite d'un éditeur d'un journal scientifique qui accueille sans examen de pareilles calomnies, et je déclare positivement mensongères les insinuations que j'aurois entrepris, ou fait entreprendre, cette publication dans le but d'en faire une affaire de lucre. Au contraire, il n'en a été tiré que 300 exemplaires, et j'ai mit à l'éditeur pour prix de ma participation, la condition que l'ouvrage ne seroit pas vendu au-dessus du prix nécessaire pour couvrir les fraix de publication. Je proteste en outre n'avoir eu aucune intention de nuire aux éditeurs de l'édition originale; si j'en ai envoyé quelques exemplaires en Angleterre, c'est uniquement afin que mes amis scientifiques puissent prendre connaissance des nombreuses additions que j'ai faite à ma traduction. Tout ceci prouve, que dans cette circonstance, comme toujours, j'ai agi uniquement dans l'intérêt de la science. Un illustre géologue Anglois pourroit au besoin rapporter ce que je lui ai dit à ce sujet, avant de m'occuper de cette traduction.

Ceci m'amène à vous faire encore une observation. J'apprends que pour user de représailles envers moi, (comme si j'avois commis des hostilités), il se préparoit une souscription pour favoriser une contrefaçon de mes 'Poissons Fossiles,' ac-

compagnée d'une traduction Anglaise du texte, qui puisse être publiée à 10s. la livraison, au lieu de 30s. Permettez-moi de vous dire ma façon de penser à ce sujet. Si le fait est vrai, j'envisagerois cet acte, *en tant que représaille*, comme tout ce que l'on pourroit imaginer de plus perfide et indigne de tout homme qui se respecte ; mais si la chose n'avoit lieu que dans un but d'utilité, je déclare aussi franchement que j'appelerois la réussite de tous mes vœux, espérant voir par là mon ouvrage passer entre les mains de quelques cents personnes qui n'auroient peut-être pas pû l'acquérir au prix de souscription. Depuis le nombre de mes souscripteurs m'est approximativement connu, je n'ai fait tirer qu'un petit nombre d'exemplaires en sus ; mon édition sera donc épuisée avant q'une pareille contrefaçon puisse être terminée, et comme j'ai détruis les gravures de mes planches, dans aucun temps je ne serai curieux de refaire une édition d'un ouvrage qui n'a été pour moi qu'une source intarissable de désagrémens et de sacrifices, quelques jouissances intellectuelles qu'il m'ait procuré. Si donc l'idée d'une édition à bon marché de mes 'Poissons Fossiles' n'est pas une mauvaise plaisanterie, je désirerais sérieusement connoître les personnes qui veulent s'en charger ; j'aurois, j'en suis certain, plusieurs bons conseils à leur donner, afin de contribuer à leur faire atteindre plus facilement leur but, qui doit être, je le pense du moins, de répandre un ouvrage envisagé comme utile, et non pas uniquement de me nuire. D'ailleurs, mon ouvrage sera complétement achevé dans un an, avec le 15me livraison que j'espère publier à Pâques prochain ; et je m'estimerais heureux de le voir traduit et reproduit sous quelle forme que ce soit.

Espérant que vous voudrez bien insérer le contenu de ma lettre au complet en le traduisant littéralement, j'ai l'honneur de vous prévenir que j'en expédie quelques copies à plusieurs de mes amis.

Veuillez agréer,
Monsieur,
L'assurance de ma considération distinguée,

L. Agassiz.

[TRANSLATION.]

Neuchatel, May 15, 1839.

SIR,

I have just read in the 29th number of your Journal an invidious crimination of the part which I have taken in the cheap edition of Sowerby's Min. Conchology, now in course of publication by M. Nicolet.

Nothing would be more richly merited than the strictures which are there passed upon me, were it not that the assertions and insinuations which the article contains are altogether malicious and without foundation. As you have brought forward this accusation in your journal, I expect from your sense of honour that you will give publicity to my justification in your forthcoming number.

Notwithstanding the great importance of Mr. Sowerby's work on the Fossils of England, this publication has met with but few purchasers on the continent; and the knowledge which I possess of the most important European Scientific Institutions, has assured me that a French or German edition of the work, published at a lower price, would be rendering a real service to Science, without in any way proving injurious to the original edition, for which the principal demand is in England. Would it then not be unfair to represent such a publication as a systematic piracy; as though translations of scientific works were not being made every day with the consent of authors, and with still greater reason after their death; and as if in doing that, which you, as the conductor of a scientific journal, ought to know I am justified in, I am likely to injure the family of Mr. Sowerby in depriving them of the benefit of a publication of which they have had the disposal for more than fifteen years, and which has been completed ten years, after the addition of two posthumous volumes? But in addition to this, when I agreed with a lithographer, M. Nicolet, to bring out a cheap Sowerby, I gratuitously furnished him with a translation of the text, enriched with numerous additions and corrections. It is then altogether untrue to say that the edition in question is but a sorry imitation of the plates of the English work accompanied by a mere translation of the text. I should never have lent my name to such a machination. It appears to me therefore, very strange conduct in the Editor of a scientific journal to give, without examination, publicity to such calumnies; and I affirm that the insinuation of my having entered upon this undertaking with a view to pecuniary emolument, to be altogether unfounded. On the contrary, only 300 copies have been struck off, and I agreed with the Editor as the price of my participation in it, that the work should not be sold at a sum above that necessary to cover the expense of its publication. I protest also, that I had not the least intention of injuring the Editor of the original edition: if I have dispatched some copies to England it has been with the view of letting my scientific friends see the number of additions and corrections which I have incorporated in my translation. All this proves that in the present instance, as always, I have only acted from a regard to the interests of science. An illustrious English geologist can, if required, relate what I said to him on this subject before I occupied myself with the translation.

This leads me to make one other remark to you. I understand, that by way of reprisal, as though I had committed hostilities, there is in preparation a subscription to bring out a reprint of my Fossil-Fishes, with an English translation of the text, at 10s. a livraison instead of 30s. Permit me to tell you my notions upon this subject. If the fact be true, and I am to regard this act in the light of a reprisal, I must deem it most perfidious and disreputable; but if the thing be only undertaken as a matter of utility, I declare with the same frankness, that I shall be gratified, hoping thus to see my work pass into the hands of some hundreds of persons who would not perhaps be able to obtain it at the original subscription price. As I have now pretty well ascertained the amount of my subscribers, I have only had a few copies struck off beyond that number, and my edition will consequently be disposed of before a reprint can be completed; and as I have effaced the drawings from the stones, at no future time shall I be de-

sirous of attempting another edition of a work which has all along been to me a source of vexation and sacrifice, whatever intellectual enjoyment it may have produced me. If, therefore, a cheap edition of my work be really seriously talked of, I should like to know the parties who are about to engage in it, as I should have some advice to give them to enable them more readily to attain the object which I, at least, think they should have in view; viz., the diffusion of a work regarded as useful, and not merely an attempt to injure me. As my work will be completely finished in a year, with the 15th livraison, which I hope to publish next Easter, I shall esteem myself fortunate to see the work translated, in whatever shape it may appear.

Hoping that you will insert the contents of this letter entire and literally translated, I have the honour to inform you that I have sent copies to several of my friends.

Louis Agassiz.

To the Editor of the
Magazine of Natural History.

[Observations in reply to the preceding letter.]*

Our remarks upon M. Nicolet's French edition of Sowerby's work on the fossil shells of this country, have drawn forth a reply from Prof. Agassiz, which should have received a place in our last month's number, had it not reached us too late for publication. We now insert his letter, with a translation of its contents, that every publicity in our power may be given to the vindication which he has put forward. Had the work under notice originated with none other name than those of the printer, publisher, and artist, greatly as we might have regretted, for the interests of science, the non-existence of international protecting enactments, the matter would have appeared to us one of comparatively trivial importance, and instead of advancing anything in the shape of reproach or remonstrance, we should have deemed it the wiser course to have been altogether silent.

The name, however, of Louis Agassiz, as the Editor and avowed projector of the reprint, and the plausible statement from a man of such high scientific reputation, that its cheapness, when compared with the price of the original work, must necessarily tend to further the progress of Geology, made us determine, without a moment's hesitation, on the course which we pursued. For though originating in such a quarter the scheme threatened to be tenfold more injurious in its operation, we felt that Agassiz was bound by so many ties to this country, that he would probably consider himself amenable to the expression of censure, if publicly di-

* Mag. Nat. Hist. Vol. iii. n. s. p. 359.

rected against him in the columns of an English Journal. We are glad to find that on this head we have not been mistaken; and we may add too that our expectations have been completely realised, in not even the shadow of an argument being adduced to oppose the views which we put forward, as to the injurious prospective operation of the part acted by Agassiz. He repeats, it is true, the substance of the shallow sophism that we quoted from his preface; but how does he support the position which he would there maintain,—the assumed "utilité" of the measure we condemn? Three hundred cheap Sowerbys, he tells us, will be distributed over the continent, and pass into the hands of those who would not otherwise have possessed copies of this important work. But has Agassiz so little foresight,—so small a share of penetration, that he looks to this *one* result as the sole and only consequence of the course which he is pursuing? Can he not perceive that the system which he has commenced, if followed up upon the strength of his example, must strike at the very existence of a class of works upon which the progress of Geology is essentially dependent;—works which convey to us delineations of new forms as they are brought to light in both the past and existing order of creation;—which tell their own tale without the aid of a translator, let the country be what it may to which science is indebted for their acquisition; but which, from the heavy cost of their production, and the limited class among whom they circulate, require that kind of support which is not restricted by the boundaries of clime or country?

Agassiz has saved us the necessity of selecting an instance by way of illustration. Singularly enough, the same document which contains the attempt to justify his conduct, informs us that notwithstanding the unexampled support which, although a foreigner, he has in this country received, by the aid of public pecuniary grants, and that of most extensive private subscription, still that his 'Poissons Fossiles' has been to him "une source intarissable de désagrémens et de sacrifices." Surely then this, his own experience, might have suggested to Agassiz the importance of every possible encouragement being held out to the present author of the 'Mineral Conchology,' with a view to the continuation of that work, rather than that the continental demand should, for the future, be supplied by an edition so low in price, that competition on the part of Mr. Sowerby would be utterly impossible.

As it respects the minor points adverted to by Agassiz, we shall be very brief. That an English sale of the cheap edition was calculated upon, we feel satisfied, because a large number of prospectuses have been dispatched to this country, and great pains taken to circulate them; but whether at the instigation of Prof. Agassiz or his lithographer, we cannot

say. The general principle of translating scientific works from one language into another is utterly foreign to the question, and cannot possibly be brought to bear upon those publications whose scientific value is vested in faithful representations of species, fac similes of which can be at any time produced at an enormous reduction of expense below that which they have originally cost the author.

That Agassiz is altogether in error on the subject of the relation in which the present Mr. James De Carle Sowerby stands in respect to the 'Mineral Conchology,' is clear from the following passage, which will be found in No. 105. "To the public the author feels deeply indebted, and cannot refrain from declaring his gratitude for the encouragement bestowed upon a work commenced by his lamented father, and in the continuation of which he himself has incurred so much responsibility."—Dated Camden Town, July, 1835.*

As to the numerous additions and corrections in the French edition upon which Agassiz seems to plume himself, we cannot give him a great deal of credit on this score, when his zeal for science has not induced him to procure from England such species as are now well known and readily obtained in a more perfect condition than some of the specimens figured in the early numbers of Mr. Sowerby's work. And upon the subject of an English edition of the 'Poissons Fossiles,' though, as far as we are aware, nothing of the kind is in contemplation, yet if its author really have acted with so little prudence as not to have reserved a supply to meet the demand that must arise when the work is rendered complete; and never intends, after the issue of his 15th livraison, to resume those labours in ancient Ichthyology which have shed so much light upon this department of science, and reflected so much lustre on himself; in that case most cordially should we adopt his avowed sentiments, and look upon a cheap English fac-simile of the 'Poissons Fossiles,' as a matter of the highest 'utilité.'

---

*It is hardly necessary to observe that since the publication of the above number in 1835, English geologists have been anxiously hoping that Mr. J. de C. Sowerby would again proceed with the continuation of the 'Mineral Conchology.'

Letter from Mr. James De Carle Sowerby, *on the subject of the French Edition of Mineral Conchology.**

Camden Town, July 27, 1839.

Sir,

It is hardly possible that I should remain silent after seeing, from the strictures you have made on the French edition of my 'Mineral Conchology,' the great interest you feel in the cause of that class of authors, whose works are similar in character to this publication. And feeling practically that unless some protection be afforded them by at least their *brother authors*, and the scientific portion of the public, they must soon be reduced to that small number who are sufficiently opulent to pay for the satisfaction they experience in their own minds, in being able to contribute to the advancement of knowledge, I beg to thank you for the manly way in which you have advocated what appears to me to be the true and lasting interest of science,—the encouragement of original publications, in opposition to the specious but fleeting advantages which cheap piracies possess. Such works only tend to convert what would otherwise be a flowing stream, into a stagnant lake, by cutting off the springs which had given it life.

Mons. Agassiz has, however, proposed to revise and correct the work in question; a proposal which, if carried fully into effect, would certainly be beneficial to the study of Geology: but in many instances it will be found that his translation perpetuates the errors of the original.

The following short history of the work will explain why revision and correction are necessary, and also account for the inequalities (justly observed by M. Agassiz) which occur in the execution of the different parts of it. This statement is not offered as an excuse for the errors, many of which have been corrected in the later volumes, but to show that such errors were mostly unavoidable at the time the work was in progress, and also as being likely to interest all who take a part in the discussion you have excited.

The first number of the 'Mineral Conchology' was published by the late Mr. James Sowerby, in June, 1812, two years before Lamarck's 'Systéme' appeared. The author being much more partial to the pictorial department, referred the principal part of the text to his two eldest sons (myself and Mr. G. B. Sowerby), while he executed the plates wholly himself: and he continued his task regularly, even during a long and painful illness, until within three or four days of his

*Mag. Nat. Hist. Vol. iii. n. s. p. 418.

death in 1822, when a considerable portion of the fourth volume had been published. For some time previously to this sad event, it had fallen to my lot to describe the whole of the shells, and now I was obliged, in addition, to engrave the plates, a few only having been done in advance by my father. At the conclusion of the sixth volume, circumstances induced me to close the work, with a view to commencing it again in a form more agreeable to the wishes of geologists; and this intention has not been lost sight of, for a continual expense has been incurred in collecting new materials, and many thanks are due to my friends in responding to my request; still however the whole of the indexes are not published, and chiefly because I have been induced to give up my time towards forwarding the immediate objects of the leading geologists of England, by yielding them the best assistance my humble talent would permit.

The sale of the 'Mineral Conchology' has only been about 400 copies, above one fourth of which number has been sent abroad. The encouragement therefore for carrying on the work has hitherto been not very great; but your having directed public attention so strongly to it, and the anxious wishes of my friends, have stimulated me to determine now upon its immediate continuation, which I hope to effect in a month from this time.

I fear I have said too much about myself, but you will perhaps excuse me if I say a few words in reference to the translation. Mons. Agassiz has not always improved the generic characters by the alterations he has made. For instance, under *Solen* he says, "Car. Gen. Bivalve.....longitudinale," instead of transversely elongated. In *Ammonites* the word "dorsal" is inserted whereas the siphon is truly ventral; &c. Neither has he embodied all the corrections given in the latter part of the work, indeed he seems not to have consulted the index in No. 105 in any case. There *Cassis* is referred to *Cassidaria; Modiola parallela* to *Plagiostoma elongatum; Helicina* to *Rotella; Helix carinatus* to *Pleurotomaria*, whether correctly or not, may be a question, but certainly it is not a *Cirrus*, (Mons. Agassiz proposes to name it *Cirrus Sowerby*); *Venus* to *Cyprina; Murex* to *Fusus;* and *Vivipara* to *Paludina:* but Agassiz has introduced several of these alterations as his *own.* Still, some of his remarks are good, and will not be lost sight of by me.

I am, Sir,
Your's, &c.

J. D. C. Sowerby.

Editor Magazine of Natural History.

SMITHSONIAN LIBRARIES
3 9088 01850 6915

10